United States Department of the Interior
Bureau of Land Management

Environmental Assessment
DOI-BLM-UT-C020-2018-0005-EA

June 2018 Competitive Oil and Gas Lease Sale

Location: Color Country District, Richfield Field Office
Sevier and Wayne counties, Utah

Applicant/Address: U.S. Department of the Interior
Bureau of Land Management
Utah State Office
440 West 200 South, Suite 500
Salt Lake City, Utah 84145-0155

Richfield Field Office
150 East 900 North
Richfield, UT 84701
435-896-1500
435-896-1550

December 2017

TABLE OF CONTENTS

CHAPTER 1 CONTENTS

Appendices:
Appendix A –Proposed Action with Stipulations for Lease
Appendix B – Maps
Appendix C – Stipulation and Notice Exhibits
Appendix D – Interdisciplinary Team Checklist

CHAPTER 1 INTRODUCTION

1.1 PROJECT LOCATION AND LEGAL DESCRIPTION

LEGAL DESCRIPTION:

The preliminary lease sale parcels are located in Sevier County and Wayne County Utah. The two parcels in Wayne County are located northeast of the town of Fremont, Utah in Township 27 South Range 3 East, sections 3, 10, 11, 14, and 15. The parcel in Sevier County is located east of the town of Sigurd, Utah in Township 23 South Range 1 West, section 6. Please see Appendix A and Maps in Appendix B.

1.2 BACKGROUND

It is the policy of the Bureau of Land Management (BLM) as derived from various laws, including the Mineral Leasing Act of 1920 (MLA) and the Federal Land Policy and Management Act of 1976 (FLPMA), to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs.

Utah is a major source of natural gas for heating and electrical energy production in the lower 48 states. The continued sale and issuance of lease parcels facilitates exploration and production as oil and gas companies seek new areas for production or attempt to develop previously inaccessible or uneconomical reserves

The BLM's Utah State Office conducts quarterly competitive lease sales to sell available oil and gas lease parcels. A Notice of Competitive Lease Sale, which lists lease parcels to be offered at the auction, is published by the Utah State Office at least 90 days before the auction is held. Lease stipulations applicable to each parcel are specified in the Sale Notice. The decision as to which public lands and minerals are open for leasing and what leasing stipulations may be necessary, based on information available at the time, is made during the land use planning process. Constraints on leasing and any future development of split estate parcels are determined by the BLM in consultation with the appropriate surface management agency or the private surface owner.

In the process of preparing a lease sale, the Utah State Office compiles a list of lands nominated and legally available for leasing, and sends a preliminary parcel list to the appropriate District Office where the parcels are located. Field Office staff then review the legal descriptions of the parcels to determine if they are in areas open to leasing under the relevant Resource Management Plan (RMP) and that appropriate stipulations have been included; verify whether any new information has become available that might change any analysis conducted during the planning process; confirm that appropriate consultations have been conducted; and identify any special resource conditions of which potential bidders should be made aware. The nominated parcels are posted online for a two week public scoping period. This posting also includes the appropriate stipulations as identified in the relevant RMP. The BLM then prepares an analysis in compliance with the National Environmental Policy Act (NEPA), usually in the form of an Environmental Assessment (EA).

After the Field Office completes the draft parcel review and NEPA analysis and returns them to the State Office, a list of available lease parcels and associated stipulations and notices is made available to the public through a Notice of Competitive Lease Sale (NCLS). Lease sale notices are posted on the Utah BLM website at: http://go.usa.gov/xXk8ch. On rare occasions, the BLM may defer or withhold additional parcels prior to the day of the lease sale. In such cases, the BLM prepares an errata to the sale notice.

A draft of the EA and an unsigned Finding of No Significant Impacts (FONSI) (if appropriate) are made available to the public for a 30 day public comment period by posting the documents on the BLM National Register for NEPA documents visit, http://go.usa.gov/xnUAg. The BLM also typically issues press releases to publicly announce the public comment period for the draft EA and unsigned FONSI. Comments received from the public are reviewed and incorporated into the NEPA document, as applicable.

The EA, with any revisions determined appropriate following the public comment period, and, if still considered appropriate, an unsigned FONSI are again made available to the public through the concurrent posting of those documents and a NCLS at least 90 days in advance of the scheduled lease sale. The posting of the NCLS, EA and FONSI initiates a 30 day public protest period for the proposed lease sale offering that will end 60 days before the scheduled lease sale. The stipulations and notices applicable to each parcel proposed for lease will be specified in attachments to the NCLS. If any changes are needed to the parcels or stipulations and notices identified through the NCLS, an erratum is posted to the BLM Utah's Oil and Gas Leasing website, and in the public room for the BLM Utah State Office, in order to notify the public of any such changes. The lease parcels, as identified by the NCLS and any errata, would be offered for sale at a competitive lease sale tentatively scheduled to be held on June 11, 2018.

If the parcels are not leased at the June 2018 lease sale, then they will remain available to be leased noncompetitively for a period of up to two years to any qualified lessee at the minimum bid cost. Parcels obtained in this way may be re-parceled by combining or deleting other previously offered lands. Mineral estate that is not leased within a two-year period after an initial offering will no longer be available and must go through a competitive lease sale process again prior to being leased.

The act of leasing does not authorize any development or use of the surface of lease lands without further application by the operator and approval by the BLM. In the future, the BLM may receive Applications for Permit to Drill (APDs) for those parcels that are leased. If APDs are received, the BLM conducts additional site-specific NEPA analysis before deciding whether to approve the APD, and what conditions of approval (COA) should apply.

The BLM has prepared this EA to disclose and analyze the environmental consequences of the leasing of three parcels during the June 2018 oil and gas lease sale. The EA is an analysis of potential impacts that could result from the implementation of a proposed action or alternatives to the proposed action. The EA ensures compliance with NEPA in making a determination as to whether any significant impacts could result from the analyzed actions. Significance is defined by NEPA and is found in 40 Code of Federal Regulations (CFR) § 1508.27. An EA provides

evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a FONSI statement. A FONSI statement, if applicable for this EA, would document the reasons why implementation of the selected alternative would not result in significant environmental impacts (effects) beyond those already addressed in the EIS prepared for the current land use plan: 2008 Richfield Field Office Record of Decision and Approved Resource Management Plan (Richfield Field Office RMP) [BLM 2008a]. If the decision maker determines that this project has significant impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the selected alternative, whether the Proposed Action or another alternative. This EA is tiered to and incorporates by reference the environmental impact analysis contained in the Richfield Field Office Proposed Resource Management Plan and Final Environmental Impact Statement (PRMP) (2008) [BLM 2008b].

Three parcels comprising 3,707.75 acres within the Richfield Field Office (RFO) were nominated for the June 2018 Competitive Oil and Gas Lease Sale. These parcels were determined to be open to be leased for oil and gas development under the Richfield Field Office RMP. This figure is comprised of 3,707.75 acres of federal land and 0 acres of split-estate land. The mineral rights for these parcels are owned by the federal government and administered by the RFO (see Appendix B). The legal descriptions of the nominated parcels are in Appendix A.

This EA documents the review of the nominated parcels under the administration of the RFO. It serves to verify conformance with the approved land use plan and provides the rationale for the Field Office's recommendation to offer or to defer particular parcels from a lease sale. This EA is also being used to determine if the stipulations and lease notices attached to the parcels as part of the Proposed Action would be sufficient to protect resources and inform potential lessees of special conditions and restrictions that may constrain development. Additional lease notices may be developed during analysis, if warranted.

1.3 PURPOSE AND NEED

The purpose of this EA is to respond to the nominations or expressions of interest for oil and gas leasing on specific federal mineral estate through a competitive leasing process. The need is established by the BLM's responsibility under the Mineral Leasing Act (MLA) of 1920, as amended, the Mining and Minerals Policy Act of 1970, the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act), and the Federal Land Policy and Management Act (FLPMA) and to promote the development of oil and gas on the public domain. Parcels may be nominated by the public, the BLM or other agencies. The MLA establishes that deposits of oil and gas owned by the United States are subject to disposition in the form and manner provided by the MLA under the rules and regulations prescribed by the Secretary of the Interior, where consistent with FLPMA and other applicable laws, regulations, and policies.

1.3.1 Decision to be Made

The BLM will decide whether to lease the nominated parcels and, if so, under what terms.

1.4 PLAN CONFORMANCE REVIEW

The Proposed Action was reviewed for conformance (43 CFR 1610.5, BLM 1617.3) with the following plan (s):

Name of Plan: Richfield Field Office Record of Decision and Resource Management Plan (RMP)
[BLM 2008a]

Date Approved: October 2008

As amended by: Utah Greater Sage Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement (BLM, 2015a) and Record of Decision (BLM 2015b)

Date Approved: September 2015

Decision Language: The RMP designated approximately 1,680,700 acres of federal mineral estate open for continued oil and gas development and leasing. The RMP (with associated amendments) also describes specific stipulations that would be attached to new leases offered in certain areas. Under the Proposed Action, parcels to be offered would be leased subject to stipulations prescribed by the RMP. Therefore, the Proposed Action conforms to the fluid mineral leasing decisions in the RMP and subsequent amendments, and are consistent with the RMP's goals and objectives for natural and cultural resources.

The Proposed Action specifically conform to the following Land Use Plan decisions:

MIN-1. (Table 19 Page 135 RFO ROD/RMP)
Issue oil and gas leases and allow for oil and gas exploration and development.

MIN-9. (Table 19 Page 136 RFO ROD/RMP)
In accordance with an UDEQ-DAQ letter dated June 6, 2008, (see Appendix 13 of the ROD/RMP) requesting implementation of interim nitrogen oxide control measures for compressor engines; BLM will require the following as a Lease Stipulation and a Condition of Approval for Applications for Permit to Drill:

- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 gms of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower.
- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gms of NOx per horsepower-hour.

MIN-10. (Table 19 Page 136 RFO ROD/RMP)
Area closed to leasing: 447,300 acres

MIN-11. (Table 19 Page 136 RFO ROD/RMP)

Manage fluid mineral leases as shown on Map 23:

- Areas open to leasing with standard lease terms: 608,700 acres
- Areas open to leasing subject to Controlled Surface Use (CSU) and/or timing limitations: 917,500 acres
- Areas open to leasing subject to No Surface Occupancy (NSO): 154,500 acres

The Alternatives also conform to the following Management Actions in the Greater Sage-Grouse Record of Decision and Approved Resource Management Plan Amendment (BLM 2015b):

MA-SSS-3: In PHMA, apply the following management to discretionary disturbances or activities that are not otherwise excluded or closed to minimize and mitigate effects on GRSG and its habitat from the project/activity:

A. Net Conservation Gain

B. Disturbance Cap

C. Density of Energy/Mining Facilities

D. Predation

E. Noise Restrictions

F. Tall Structure Restrictions

G. Seasonal Restrictions

H. Buffers

I. Required Design Features

MA-SSS-6: Proposed projects within State of Utah Sage-Grouse Management Areas (SGMA) and USFWS priority areas for conservation (PAC), as well as adjacent to PHMA outside these areas, will consider impacts on GRSG and implement measures to mitigate impacts when preparing site-specific planning and environmental compliance.

MA-MR-1: Allow exploration for all minerals (e.g., geophysical, trenching, drilling, etc.) within mapped occupied GRSG habitat areas that are not closed to leasing, permitting, etc., to obtain exploratory information. In areas where leasing, permitting, etc. is still available, minerals exploration shall be subject to the pertinent management for discretionary activities in PHMA (MA-SSS-3) and GHMA (MA-SSS-5).

MA-MR-2: Manage fluid mineral leasing in PHMA as follows (figure 2-4, Fluid Minerals [Oil and Gas][Appendix A]) (Appendix G, Stipulations Associated with Fluid Mineral Leasing):

- open to leasing, subject to standard stipulations: 0 acres
- open to leasing, subject to CSU and/or TL stipulations: 23,600 acres
- open to leasing, subject to NSO stipulations: 3,229,600 acres
- closed to leasing: 111,900 acres

MA-MR-3:

Unleased Areas within PHMA

PHMA will be designated as open to leasing fluid minerals, subject to NSO stipulations.

It is also consistent with RMP decisions and their corresponding goals and objectives related to the management of (including but not limited to) air quality, cultural resources, recreation, riparian, soils, water, vegetation, fish & wildlife and Areas of Critical Environmental Concern (ACEC) as well as the Surface Stipulations Applicable to Oil and Gas Leasing and Other Surface Disturbing Activities (Appendix 11 of the RMP/ROD).

Standard lease terms provide for reasonable measures to minimize adverse impacts to specific resource values, land uses, or users (Standard Lease Terms are contained in Form 3100-11, Offer to Lease and Lease for Oil and Gas, U.S. Department of the Interior, BLM, October 2008 or later edition). Compliance with valid, nondiscretionary statutes (laws) is included in the standard lease terms. Nondiscretionary actions include the BLM's requirements under federal environmental protection laws, such as the Clean Water Act, Clean Air Act, Endangered Species Act, National Historic Preservation Act, and Federal Land Policy Management Act, which are applicable to all actions on federal lands.

Once the lease has been issued, the lessee has the right to use as much of the leased land as necessary to explore for, drill for, extract, remove, and dispose of oil and gas deposits located under the leased lands, subject to the standard lease terms and additional restrictions attached to the lease in the form of lease stipulations (43 CFR 3101.1-2). Even if no restrictions are attached to the lease, the operations must be conducted in a manner that avoids unnecessary or undue degradation of the environment and minimizes adverse impacts to the land, air, water, cultural, biological, and visual elements of the environment, as well as other land uses or users. Also included in all leases are the two mandatory stipulations for the statutory protection of cultural resources and threatened or endangered species (BLM Handbook 3120-1), which are described in Section 2.3.2. BLM would also encourage industry to consider participating in EPA's Natural Gas STAR program. The program is a flexible, voluntary partnership wherein EPA works with companies that produce, process, transmit and distribute natural gas to identify and promote the implementation of cost-effective technologies and practices to reduce emissions of methane, a greenhouse gas.

1.5 PUBLIC PARTICIPATION

1.5.1 **Scoping**

The principal goal of scoping is to identify issues, concerns, and potential impacts that require detailed analysis. The BLM uses both internal and external scoping to identify potentially affected resources and associated issues.

Internal scoping was conducted through meetings of an interdisciplinary (ID) team of resource specialists and discussion of the nominated parcels. The following issues were identified:

Air Quality
The National Park Service expressed concern that development of the parcels could affect the air quality of Capitol Reef National Park – specifically contributing to regional haze from particulate matters and exceeding the EPA standard for ozone.

Greenhouse Gas Emissions
How would oil and gas development operations that could result from leasing the proposed parcels impact greenhouse gas emissions?

National Historic Trails
A segment of the Old Spanish National Historic Trail current bisects Parcel 003 and may be impacted by development of the parcel.

Migratory Birds
What impact would leasing the proposed parcels have on migratory bird species?

Special Status Plant and Animal Species
How would leasing the proposed parcels affect the habitat of special status plants and animals within those parcels?

The BLM considered several issues raised during project scoping. After review of available information, the ID Team determined that the following resources/issues did not have the potential to be significantly impacted by any of the alternatives and, therefore, are dismissed from detailed analysis (See Appendix D – ID Team Checklist): areas of critical environmental concern, cultural resources, environmental justice, farmlands, fire/fuels management, geology/mineral resources, invasive species/noxious weeds, lands/access, livestock grazing, , native american religious concerns, paleontology, rangeland health standards, recreation, socio-economics, soils, threatened, endangered, or candidate plant species, threatened, endangered, or candidate animal species, wastes, water resources/quality, water rights, wetlands/riparian zones, wilderness/WSA, wildlife and fish excluding designated/special status species, woodland/forestry, vegetation excluding designated/special status species, visual resources, wild horses and burros, and lands with wilderness characteristics.

1.5.2 Public Comment Period

The preliminary EA and the unsigned Finding of No Significant Impact (FONSI) are available for a 30-day public review and comment period beginning December 21, 2017 and ending January 23, 2018. The document is available online at http://go.usa.gov/xnUAg and in the public room at the Richfield Field Office. The document may be viewed at the field office during regular business hours (8:00 a.m. to 4:30 p.m.), Monday through Friday, except holidays. Comments should be sent to blm_ut_lease_sales@blm.gov or to the Richfield Field Office 150 East 900 North Richfield, UT 84701 by close of business on January 23, 2018. Comments received from the public will be reviewed and incorporated into the EA as appropriate.

1.6 RELATIONSHIP TO STATUTES, REGULATIONS, POLICIES OR OTHER PLANS

The Proposed Action is in compliance with federal environmental laws and regulations, Executive Orders, and Department of Interior and BLM policies and is consistent, to the maximum extent possible, with state laws and local and county ordinances and plans, including the following:

- Federal Land Policy and Management Act (1976) as amended and the associated regulations at 43 CFR Part 1600
- Mineral Leasing Act (1920) as amended and the associated regulations at 43 CFR Part 3100
- BLM Utah Riparian Management Policy (2005)
- National Historic Preservation Act (1966) as amended and the associated regulations at 36 CFR Part 800
- Endangered Species Act (1973) as amended
- BLM Manual 6840- Special Status Species Management
- Bald and Golden Eagle Protection Act (1962)
- Migratory Bird Treaty Act (1918)
- Utah Partners in Flight Avian Conservation Strategy Version 2.0 (Parrish et al., 2002)
- Birds of Conservation Concern 2002 (USFWS 2008)
- Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds
- MOU between the USDI BLM and USFWS to Promote the Conservation and Management of Migratory Birds (April 2010)
- BLM Manual 6310 - Conducting Wilderness Characteristics Inventory of BLM Lands
- BLM Manual 6320 - Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process
- BLM Handbook 3120-1 Competitive Leases (P)
- BLM Washington Office IM 2016-143 Implementation of Greater Sage-Grouse Resource Management Plan Revisions or Amendments – Oil & Gas Leasing and Development Sequential Prioritization
- MOU Among the USDA, USDI and EPA Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions Through the NEPA Process (2011)
- National Trails System Act of 1968, as amended (NTSA)
- Protection of Ground Water Associated with Oil and Gas Leasing, Exploration and Development (BLM UT IM 2010–055)
- Richfield Field Office Visual Resource Inventory (2011)

These documents, and their associated analysis or information, are hereby incorporated by reference, based on their use and consideration by various authors of this document. The attached Interdisciplinary Team Checklist, Appendix D, was also developed after consideration of these documents and their contents. Each of these documents is available for review upon request to the RFO.

1.7 DOCUMENTS INCORPORATED BY REFERENCE

In order to reduce redundant paperwork and analysis in the NEPA process (*See* 40 CFR §§ 1502.20 and 1502.21) the following documents and their associated information or analysis are hereby incorporated by reference.

1.7.1 EISs, EAs and Decision Documents

- Richfield Field Office Final Environmental Impact Statement (FEIS) and Proposed Resource Management Plan (PRMP) [BLM 2008b]

- Record of Decision for the Richfield Field Office Resource Management Plan (BLM, 2008a)

- Utah Greater Sage Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement [BLM 2015] and Record of Decision (BLM, 2015b)

- Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement [BLM 2007] and Record of Decision

CHAPTER 2 ALTERNATIVES

2.1 INTRODUCTION

This chapter describes the alternatives analyzed in detail. Alternatives considered but not analyzed in detail are also discussed.

2.2 REASONABLY FORESEEABLE DEVELOPMENT SCENARIO

Although at this time it is unknown when, where, or if future well sites or roads might be proposed on any leased parcel, should a lease be issued site specific analysis of individual wells or roads would occur when a lease holder submits an APD (Application for Permit to Drill). The Reasonably Foreseeable Development (RFD) scenario from Appendix 12 of the RMP EIS serves as an analytical baseline for identifying and quantifying direct, indirect, and cumulative effects of oil and gas activity and forms the foundation for the analysis of the effects of oil and gas management decisions in planning and environmental documents. It is assumed that each lease sold will have at least one well pad developed and that those well pads will be estimated to disturb six acres each. With three proposed leases, the estimated surface disturbance would be 18 acres.

The following sections provide a general discussion of possible post-leasing RFD activities. All of these activities would require additional NEPA review.

2.2.1 Well Pad and Road Construction

Equipment for well pad construction would consist of dozers, trackhoes, and graders. All well pads would be reclaimed. Topsoil from each well pad would be stripped to a minimum depth of six inches and stockpiled for future reclamation. Interim reclamation of the pad would occur if the well produces commercial quantities of oil or gas. Interim reclamation involves a reduction of the drill pad to a size that accommodates the functions of a producing well. The topsoil would be spread over the interim reclamation area, seeded, left in place for the life of the well, and then used during the final reclamation process. If the well is not productive final reclamation of the pad and constructed road would begin. Disturbance for each well pad would be estimated at an area of approximately four acres of land, including topsoil piles. Disturbed land would be seeded with a mixture (certified weed free) and rate as recommended or required by the BLM.

Depending on the locations of the proposed wells, it is anticipated that some new or upgraded access roads would be required to access well pads and maintain production facilities. Any new roads constructed for the purposes of oil and gas development would be utilized year-round for maintenance of the proposed wells and other facilities, and for the transportation of fluids and/or equipment, and would remain open to other land users. Construction of new roads or upgrades to existing roads would require a 12-24 foot travelway width and would be constructed of native material. It is not possible to determine the distance of road that would be required because the location of the wells would not be known until the APD stage. However, for purposes of analyses it is assumed that disturbance from access roads would be approximately 8 acres (2 miles of road at 4 acres per mile) per well site.

2.2.2 Well Drilling and Completion Operations

A drilling rig would be transported to the well pad (along with other necessary equipment). Drilling would commence with well spud. Typical drilling operations would include: adding joints of drill pipe at the surface as the hole deepens; circulating drilling fluids to cool the drill bit and remove the drill cuttings; pulling the drill pipe from the hole to replace worn drill bits; and setting strings of casing and cementing them in place. Air and/or water-based drilling fluid may be used to drill the hole. Prior to setting the production casing, open-hole well logs may be run to identify potentially productive horizons. If the evaluation concludes that sufficient natural gas and/or oil are present and recoverable, steel production casing would be installed and cemented in place. Drilling activities on a well would typically occur 24 hours per day, seven days per week, and would require approximately 20 workers. It could require from two to four weeks to drill a well depending on the depth and complexity of the well.

Once a well has been drilled and evaluated to have sufficient oil and/or natural gas, completion operations would begin. Well completion involves perforating the production casing in target zones, followed by hydraulic fracturing (fracking) of the formation. Fracking operations include injecting an agent (e.g., water, gel, liquid, carbon dioxide, and/or nitrogen) into the formation under pressure. The fracking agent would likely contain sand or other proppant material to keep the fractures from closing, thereby allowing fluids to be produced from the formation. The next phase of completion would be to flow and test the well to determine rates of production.

Typical equipment and vehicles used during completion activities might include carbon dioxide tanker trucks; sand transport trucks; water trucks; oil service trucks used to transport pumps and equipment for fracking; flat beds and gin trucks to move water tanks, rigs, tubing, and fracking chemicals; logging trucks (cased hole wireline trucks); pickup trucks to haul personnel and miscellaneous small materials; and workover rigs.

Completion activities on individual wells may occur 24 hours per day, seven days per week, and would require approximately 20 to 40 workers. Completion of an individual well could take from 7 to 30 days, depending on the number of completion zones.

Hydraulic Fracturing

Hydraulic fracturing (HF) is a well stimulation technique used to increase oil and gas production from underground rock formations. As summarized below, HF technology is not used on all wells drilled in the RFO. As a result, HF will be evaluated at the APD stage should the lease parcel be sold/issued, and a development proposal submitted. The following paragraphs provide a general discussion of the HF process that could potentially be implemented if development were to occur, including well construction information and general conditions encountered within the RFO.

HF involves the injection of fluids through a wellbore under pressures great enough to fracture the oil and gas producing formations. The fluid is generally comprised of a liquid such as oil, carbon-dioxide or nitrogen, and proppant (commonly sand or ceramic beads), and a minor percentage of chemicals to give the fluid desirable flow characteristics, corrosion inhibition, etc. The proppant holds open the newly created fractures after the injection pressure is released. Oil and gas flow through the fractures and up the production well to the surface.

HF has been used by oil and natural gas producers since the late 1940s and, for the first 50 years, was mostly used in vertical wells in conventional formations. HF is still used in these settings, but the process has evolved. Technological developments (including horizontal drilling) have led to the use of HF in "unconventional" hydrocarbon formations that could not otherwise be profitably produced.

The use of horizontal drilling through unconventional reservoirs combined with high-volume water based multi-stage HF activities has led to an increase in oil and gas activity in several areas of the country which has, in turn, resulted in a dramatic increase in domestic oil and gas production nationally. However, along with the production increase, HF activities are suspected of causing contamination of fresh water by creating fluid communication between oil and gas reservoirs and aquifers. The EPA recently conducted an assessment of HF on drinking water resources (https://www.epa.gov/hfstudy).

There are presently no unconventional reservoirs in the RFO that are being exploited using high-volume water based HF techniques.

Oil and Gas Fields

The nearest oil and gas field (within the RFO) to the proposed lease parcels, Covenant Field, is approximately 2.7 miles southeast of Parcel 003 and 30.3 miles northwest of Parcels 001 and 002. The Last Chance Field, located in Emery County (Price Field Office), is approximately 20.3 miles northeast of Parcels 001 and 002.

2.2.3 Production Operations

If wells were to go into production, facilities would be located at the well pad and typically include a well head, a dehydrator/separator unit, and storage tanks for produced fluids. The production facility would typically consist of two storage tanks, a truck load-out, separator, and dehydrator facilities. Construction of the production facility would be located on the well pad and not result in any additional surface disturbance.

All permanent surface structures would be painted a flat, non-reflective color specified by the BLM in order to blend with the colors of the surrounding natural environment. Facilities that are required to comply with the Occupational Safety and Health Act (OSHA) would be excluded from painting color requirements. All surface facilities would be painted immediately after installation and under the direction and approval of the BLM.

All operations would be conducted following the "Gold Book", *Surface Operating Standards for Oil and Gas Exploration and Development*. The Gold Book was developed to assist operators by providing information on the requirements for conducting environmentally responsible oil and gas operations on federal lands. The Gold Book provides operators with a combination of guidance and standards for ensuring compliance with agency policies and operating requirements, such as those found at 43 CFR 3000 and 36 CFR 228 Subpart E; Onshore Oil and Gas Orders (Onshore Orders); and Notices to Lessees. Included in the Gold Book are environmental BMPs; these measures are designed to provide for safe and efficient operations while minimizing undesirable impacts to the environment.

If oil is produced, the oil would be stored on location in tanks and transported by truck to a refinery. The volume of tanker truck traffic for oil production would be dependent upon production of the wells.

2.2.4 Produced Water Handling

Water is often associated with either produced oil or natural gas. Water is separated out of the production stream and can be temporarily stored in the reserve pit for 90 days. Permanent disposal options include discharge to evaporation pits or underground injection. Handling of produced water is addressed in Onshore Oil and Gas Order No. 7, which prescribes measures required for the protection of surface and ground water sources.

2.2.5 Maintenance Operations

Traffic volumes during production would be dependent upon whether the wells produced natural gas and/or oil, and for the latter, the volume of oil produced. Well maintenance operations may include periodic use of work-over rigs and heavy trucks for hauling equipment to the producing well, and would include inspections of the well by a pumper on a regular basis or by remote sensing. The road and the well pad would be maintained for reasonable access and working conditions. Portions of the well pad not needed for production of the proposed well, including the reserve pit, would be re-contoured and reclaimed, as an interim reclamation of the site.

2.2.6 Plugging and Abandonment

If the wells do not produce economic quantities of oil or gas, or when it is no longer commercially productive, the well would be plugged and abandoned. The wells would be plugged and abandoned following procedures approved by a BLM Petroleum Engineer, which would include requiring cement plugs at strategic positions in the well bore. All fluids in the reserve pit would be allowed to dry prior to reclamation work. After fluids have evaporated from the reserve pit, sub-soil would be backfilled and compacted within 90 days. If the fluids within the reserve pit have not evaporated within 90 days (weather permitting or within one evaporation cycle, i.e. one summer), the fluid would be pumped from the pit and disposed of in accordance with applicable regulations. The well pad would be re-contoured, and topsoil would be replaced, scarified, and seeded within 180 days of the plugging the well.

2.3 ALTERNATIVES ANALYZED IN DETAIL

2.3.1 No Action Alternative

The BLM NEPA Handbook (h-1790-1) states that for EAs the No Action Alternative generally means that the Proposed Action would not take place. In the case of a lease sale, the leasing of particular parcels would not take place.

Under the No Action Alternative, the BLM would defer all nominated lease parcels from the June 2018 lease sale. The parcels could be considered for inclusion in future lease sales. Surface management would remain the same and ongoing oil and gas development would continue on surrounding private, state, and federal leases.

2.3.2 Proposed Action - Lease All Nominated Parcels in Conformance with the RMP

Under this alternative, the BLM would lease Federal mineral estate in nominated parcels available for leasing in the resource area in accordance with the RFO RMP (October 2008). The current lease sale includes parcels in Sevier and Wayne counties. Those lands proposed for lease under this alternative total 3,707.75 acres of federal mineral estate and federal surface (see Appendix A). The lands have been grouped into appropriate lease parcels for competitive sale as oil and gas leases in accordance with the 43 CFR 3100 regulations. The leases would include the standard lease terms and conditions for development of the surface of oil and gas leases provided in 43 CFR 3100. Stipulations to protect other surface and subsurface resources would also apply, as prescribed by the RMP. These stipulations are described in Appendix C.

Table 2-1: Acreage of Leasing Categories

Leasing Category	Total Acreage within Proposed Lease Parcels	Percent of Proposed Lease Parcels
Open with Standard Lease Terms	150	4
Controlled Surface Use	2914	78
No Surface Occupancy	644	17

Table 2-2: Acreage of Leasing Categories per Parcel

Parcel #	Open with Standard Lease Terms	Controlled Surface Use	No Surface Occupancy
001	0 acres	1199 acres	644 acres
002	0 acres	1242 acres	0 acres
003	150 acres	473 acres	0 acres

H-3120-1, the Competitive Leasing Handbook also requires the following two standard stipulations be added to every lease:

> **Cultural Resource Protection Stipulation**
>
> This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

Threatened and Endangered Species Act Stipulation

The lease may now and hereafter contain plants, animals, and their habitats determined to be special status species. The BLM may recommend modifications to exploration and development proposals to further its conservation and management objectives to avoid BLM approved activity that will contribute to a need to list such a species or their habitat. 13

The BLM may require modification to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. The BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligation under requirements of the Endangered Species Act as amended, 16 U. S. C. § 1531 *et seq*. including completion of any required procedure for conference.

2.4 Alternatives Considered but not Analyzed in Detail

No other alternatives to the Proposed Action were identified that would meet the purpose and need of the Proposed Action.

CHAPTER 3 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the Interdisciplinary Team Checklist found in Appendix D. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

The CEQ Regulations state that NEPA documents "must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail" (40 CFR 1500.1(b)). While many issues may arise during scoping, not all of the issues raised warrant analysis in an EA. Issues will be analyzed if: 1) an analysis of the issue is necessary to make a reasoned choice between alternatives, or 2) if the issue is associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of the impacts.

3.2 GENERAL SETTING

Refer to Appendix B for maps showing the location of the parcels.

The proposed action would result in the leasing for oil and gas development of three parcels within the RFO. See Appendix A for legal descriptions and Appendix B for maps of the parcels. Additional information is also contained in the Interdisciplinary Team Checklist (Appendix D).

These parcels range in size from 623 to 1,843.36 acres for a total of 3,707.75 acres. The parcels are located in Sevier and Wayne counties, Utah (Appendix B). The landscape, topography, plant and animal species throughout the proposed parcels to be leased is varied. The area is covered in a mixture of grass and shrubs. Some of the dominant vegetation species are: Wyoming sagebrush, black sagebrush, pinyon pine, juniper, Gambel's oak, shadscale, needle and thread grass, Indian ricegrass and greasewood. Areas that have been disturbed or burned from a wildfire are predominantly cheatgrass or seeded desirable plant species. High densities of Class B and Class D roads crisscross the area. The BLM administered areas are utilized by grazing cattle for a portion of the year.

3.3 RESOURCES/ISSUES BROUGHT FORWARD FOR ANALYSIS

3.3.1 **Air Quality**

Air quality is affected by various natural and anthropogenic factors. Industrial sources such as power plants, mines, and oil and gas extraction activities within Utah contribute to local and regional air pollution. Urbanization and tourism create emissions that affect air quality over a wide area. Air pollutants generated by motor vehicles include tailpipe emissions and dust from travel over dry, unpaved road surfaces. Strong winds can generate substantial amounts of windblown dust. Air pollution emissions are characterized as point, area, or mobile. Point sources are large, stationary facilities such as power plants and manufacturing facilities and are accounted for on a facility by facility basis. Area sources are smaller stationary sources and, due to their greater number, are accounted for by classes. Production emissions from an oil and gas well and dust from construction of a well pad would be considered area source emissions.

Mobile sources consist of non-stationary sources such as cars and trucks. Mobile emissions are further divided into on-road and off-road sources. Engine exhaust from truck traffic to and from oil and gas locations would be considered on-road mobile emissions. Engine exhaust from drilling operations would be considered off road mobile emissions.

The Clean Air Act required the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Utah Division of Air Quality (UDAQ) is responsible to ensure compliance with the NAAQS within the state of Utah. Table 3-1 shows NAAQS for the EPA designated criteria pollutants [EPA 2017b].

Table 3-1 National Ambient Air Quality Standards (NAAQS) for the EPA designated criteria pollutants.

Pollutant	Averaging Time	National Ambient Air Quality Standards (NAAQS)		
		Primary		
		(ppm)	(ppb)	(ug/m^3)
Carbon Monoxide	1 hour	35 [(a)]	35,000	40,000
	8 hour	9 [(a)]	9,000	10,000
Lead	Rolling 3-month	---	---	0.15
Nitrogen Dioxide	1 hour	0.1	100 [(b)]	189
	Annual (Arithmetic Mean)	0.053	53	100
PM_{10}	24 hour	---	---	150 [(c)]
$PM_{2.5}$	24 hour	---	---	35 [(d)]
	Annual (Arithmetic Mean)	---	---	12.0 [(e)]
Ozone	8 hour	0.070 [(f)]	70	147
Sulfur Dioxide	1 hour	0.075	75 [(g)]	197

Note: **Bold** indicates the standard as written in the corresponding regulation. Other values are conversions.

[(a)] Not to be exceeded more than once per year.

[(b)] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

[(c)] Not to be exceeded more than once per year on average over 3 years.

[(d)] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 $\mu g/m^3$ (effective December 17, 2006).

[(e)] To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 12.0 $\mu g/m^3$. (effective December 14, 2012)

[(f)] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.070 ppm.

[g] To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb (effective June 22, 2010).

[h] not to be exceeded more than two times per year.

[i] not to be exceeded more than two times in any five consecutive days.

Table 3-2 Division of Air Quality – 2014 Annual Report Triennial Inventory (tons/year) (Utah DEQ 2016)

County	CO	NO_x	PM10	PM2.5	SO_x	VOC
Wayne	5,976.15	324.44	1,181.34	165.46	1.87	22,182.36
Sevier	9,057.70	2,011.85	7,511.56	1,091.88	35.68	16,843.33

Prevention of Significant Deterioration

Under the Prevention of Significant Deterioration (PSD) provisions of the Clean Air Act (CAA), incremental increases of specific pollutant concentrations are limited above a legally defined baseline level. Many national parks and wilderness areas are designated as PSD Class I. The PSD program protects air quality within Class I areas by allowing only slight incremental increases in pollutant concentrations. Areas of Utah not designated as PSD Class I are classified as Class II. For Class II areas, greater incremental increases in ambient pollutant concentrations are allowed as a result of controlled growth.

Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, benzene, toluene, ethylbenzene, isomers of xylene (BTEX) compounds, and normal-hexane (n-hexane).

The CAA requires the EPA to regulate emissions of toxic air pollutants from a published list of industrial sources referred to as "source categories." The EPA has developed a list of source categories that must meet control technology requirements for these toxic air pollutants. Under Section 112(d) of the CAA, the EPA is required to develop regulations establishing national emission standards for hazardous air pollutants (NESHAP) for all industries that emit one or more of the pollutants in major source quantities. These standards are established to reflect the maximum degree of reduction in HAP emissions through application of maximum achievable control technology (MACT). Source categories for which MACT standards have been implemented include oil and natural gas production and natural gas transmission and storage.

3.3.2 Greenhouse Gas Emissions/Climate Change

Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years such as temperature and precipitation. Climate change includes both historic and predicted climate shifts that are beyond normal weather variations.

Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as "a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use" (IPCC, 2013).

The IPCC states: "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased" (IPCC, 2013). The global average surface temperature has increased approximately 1.5°F from 1880 to 2012 (IPCC, 2013). Warming has occurred on land surfaces, oceans and other water bodies, and in the troposphere (lowest layer of earth's atmosphere, up to 4-12 miles above the earth).

Earth's atmosphere has a natural greenhouse effect wherein naturally occurring gases such as water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) absorb and retain heat. Without the natural greenhouse effect, earth would be approximately 60°F cooler (Climate Change SIR, 2010). Current ongoing global climate change is caused, in part, by the atmospheric buildup of greenhouse gases (GHGs), which may persist for decades or even centuries. Each GHG has a global warming potential (GWP that accounts for the intensity of each GHG's heat trapping effect and its longevity in the atmosphere.

As defined by USEPA, the GWP provides "ratio of the time-integrated radiative forcing from the instantaneous release of one kilogram of a trace substance relative to that of one kilogram of CO2." The GWP of greenhouse gas is used to compare global impacts of different gases and used specifically to measure how much energy the emissions of one ton of gas will absorb over a given period of time (e.g. 100 years), relative to the emissions of one ton of CO2. The GWP accounts for the intensity of each GHG's heat trapping effect and its longevity in the atmosphere. The GWP provides a method to quantify the cumulative effects of multiple GHGs released into the atmosphere by calculating carbon dioxide equivalent for the GHGs.

The buildup of GHGs such as CO_2, CH_4, N_2O, and other less common gases since the start of the industrial revolution has substantially increased atmospheric concentrations of these compounds compared to background levels. At such elevated concentrations, these compounds absorb more energy from the earth's surface and re-emit a larger portion of the earth's heat back to the earth rather than allowing the heat to escape into space than would be the case under more natural conditions of background GHG concentrations.

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially CO_2 and methane) from fossil fuel development, large wildfires, activities using combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales due to their differences in global warming potential (described above) and lifespans in the atmosphere. For example, CO_2 may last 50 to 200 years in the atmosphere while methane has an average atmospheric lifetime of 12 years (Climate Change

SIR, 2010). Greenhouse gases are often presented using the unit of Metric Tons of CO2 equivalent (MT CO2e) or Million Metric Tons (MMT CO2e), a metric to express the impact of each different greenhouse gas in terms of the amount of CO2 making it possible to express greenhouse gases as a single number. For example, 1 ton of methane would be equal to 28-36 tons of CO2 equivalent, because it has a GWP over 25 times that of CO2 [EPA 2017a].

- Carbon dioxide (CO2), by definition, has a GWP of 1 regardless of the time period used because it is the gas being used as the reference. CO2 remains in the climate system for a very long time; CO2 emissions cause increases in the atmospheric concentrations of CO2 that will last thousands of years [EPA 2017a].

- Methane (CH4) is estimated to have a GWP of 28-36 times that of CO2 over 100 years. CH4 emitted today lasts about a decade on average, which is much less time than CO2. But CH4 also absorbs much more energy than CO2. The net effect of the shorter lifetime and higher energy absorption is reflected in the GWP. The methane GWP also accounts for some indirect effects, such as the fact that methane is a precursor to ozone, and ozone is in itself a greenhouse gas [EPA 2017a].

- Nitrous Oxide (N2O) has a GWP of 265-298 times that of CO2 for a 100-year timescale. N2O emitted today remains in the atmosphere for more than 100 years, on average [EPA 2017a]. Table 3-3 contains GHGs regulated by USEPA and global warming potentials.

Table 3-3 GHG Regulated by USEPA and Global Warming Potentials

Air Pollutant	Chemical Symbol/ Acronym	Global Warming Potential
Carbon Dioxide	CO_2	1
Methane	CH4	28-36
Nitrous Oxide	N_2O	298
Hydrofluorocarbons	HFCs	Varies
Perfluorocarbons	PFCs	Varies
Sulfur hexafluoride	SF_6	22,800

Source: [USEPA 2017a]

The IPCC concluded that “warming of the climate system is unequivocal” and “most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations.” [IPCC 2007] Extensive research and development efforts are underway in the field of carbon capture and sequestration (CCS) technology, which could help direct management strategies in the future. The IPCC has identified a target worldwide “carbon budget” to estimate the amount of CO2 the world can emit while still having a likely chance of limiting global temperature rise to 2°C above pre-industrial

levels. The international community estimates this budget to be 1 trillion tonnes of carbon [IPCC 2016].

Because GHGs circulate freely throughout Earth's atmosphere, climate change is a global issue. The largest component of global anthropogenic GHG emissions is CO2. Global anthropogenic carbon emissions reached about 7,000,000,000 MT per year in 2000 and an estimated 9,170,000,000 MT per year in 2010 [Boden, Marland, & Andres 2013]. Oil and gas production contributes to GHGs such as CO2 and methane. Natural gas systems were the largest anthropogenic source category of CH4 emissions in the United States in 2014 with 176.1 MMT CO2 e of CH4 emitted into the atmosphere. Those emissions have decreased by 30.6 MMT CO2 e (14.8 percent) since 1990 [EPA 2016].

Global mean surface temperatures have increased nearly 1.0°C (1.8°F) from 1890 to 2006 [NASA 2007]. In 2001, the IPCC (2007) indicated that by the year 2100, global average surface temperatures would increase 1.4 to 5.8°C (2.5 to 10.4°F) above 1990 levels. The National Academy of Sciences [Hansen et al. 2006] has confirmed these findings, but also indicated that there are uncertainties regarding how climate change may affect different regions. Observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Data indicate that northern latitudes (above 24° N) have exhibited temperature increases of nearly 1.2°C (2.1°F) since 1900, with nearly a 1.0°C (1.8°F) increase since 1970 alone. It also shows temperature and precipitation trends for the conterminous United States. For both parameters we see varying rates of change, but overall increases in both temperature and precipitation.

In recent years, many states, tribes, and other organizations have initiated GHG inventories, tallying GHG emissions by economic sector. The U.S. EPA provides links to statewide GHG emissions inventories [EPA 2015]. Guidelines for estimating project-specific GHG emissions are available [URSC 2010], but some additional data, including the projected volume of oil or natural gas produced for an average well, number of wells (as well as other factors described in Section 4.2.1 Air Quality) were used to provide GHG estimates.

3.3.3 Migratory Birds including Raptors

All of the lease parcels contain nesting and foraging habitat for migratory birds. The Migratory Bird Treaty Act of 1918 protects migratory birds and their parts. Executive Order 13186, signed on January 10, 2001, directs federal agencies to evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern. The MOU between the US Department of Interior BLM and United States Fish and Wildlife Service (USFWS) to promote the Conservation and Management of Migratory Birds (extended 5/2015) also strives to increase the conservation of migratory birds and avoid and minimize adverse impacts on these species through collaboration with USFWS.

Habitat for priority migratory birds occurs on all three parcels. There are three priority migratory bird species that are present on the parcels: Brewer's Sparrow, Sage Sparrow and Sage Thrasher. All three of these birds are found within the sagebrush steppe habitat that occurs on the parcels.

Raptors, including the red-tailed hawk, Cooper's hawk, sharp-shinned hawk, American kestrel, northern harrier, great horned owl, Swainson's hawk, and other less common species utilize each of the habitat types within the lease parcels and may be present year round or seasonally. Nesting tends to be concentrated around cliffs, large trees, embankments, and other habitat features.

3.3.4 Special Status Plant & Animal Species

BLM manages sensitive species in accordance with BLM Manual 6840 with the objective to initiate proactive conservation measures that reduce or eliminate threats to these species to minimize the likelihood of and need for listing of these species under the Endangered Species Act (ESA). Based on the Utah BLM Sensitive Fish and Wildlife Species List – December 20, 2010, there are 57 BLM Utah sensitive species, including 12 species under conservation agreement and 4 candidate species. Each species was evaluated for potential to occur within the lease parcels and potential impacts. All available data sources, including GIS files, field office files, and the Utah Wildlife Action Plan were used to determine if the parcels fall within known habitat for BLM Sensitive Species. After site-specific review, it has been determined that the BLM Sensitive Species listed in Table 3-4, "BLM Sensitive Species" may occur within the project area or be affected by the Proposed Action.

Table 3-4 Special Status Animal Species

Species	Status	Potential Occurrence and Habitat Type	Parcels
Golden Eagle	Bald and Golden Eagle Protection Act	Throughout the summer, golden eagles are found in mountainous areas, canyons, shrub-land and grassland. During the winter they inhabit shrub-steppe vegetation, as well as wetlands, river systems and estuaries. Golden eagles are quite common within the affected counties. All parcels contain foraging habitat however no known nests exist within them.	All
Bald Eagle	Bald and Golden Eagle Protection Act, BLM Sensitive	Upland wintering habitats often consist of open habitats with concentrations of medium-sized mammals, such as meadows, prairie, and open forests with regular carrion access.	All
Ferruginous Hawk	BLM Sensitive	Preferred habitat is the arid and semiarid grassland regions of North America, including all of the affected counties. The countryside is open, level, or rolling prairies; foothills or middle elevation plateaus largely devoid of trees; and cultivated shelterbelts or riparian corridors. Rock outcrops, shallow canyons, and gullies may characterize some habitats. These hawks avoid high elevations, forest interiors, narrow canyons, and cliff areas.	All
Greater Sage-Grouse	BLM Sensitive	Sage-grouse are emblematic of the sagebrush-steppe of the intermountain West. Priority	001

Species	Status	Potential Occurrence and Habitat Type	Parcels
		habitat management areas are found within the project area. Utah's Conservation Plan for Sage-Grouse (Utah Greater Sage-Grouse Working Group, 2013) identifies seasonal habitat values for nesting and brood-rearing, winter, as well as opportunity areas for habitat improvement.	
Pygmy Rabbit	BLM Sensitive	Pygmy rabbits are found primarily in big sagebrush and rabbitbrush dominated communities. Pygmy rabbits are also found in areas where greasewood is abundant.	001 and 002
California Condor	Experimental, Non-Essential	The condors live in rocky shrubland, coniferous forests, and oak savannas. They are often found near cliffs or large trees, which they use as nesting sites. Individual birds have a huge range and have been known to travel up to 250 km (160 mi) in search of carrion.	All
Jones Townsendia (*Townsendia jonesii var.* lutea)	BLM Sensitive	Salt desert shrub and juniper communities at 5,5000 to 6,000 feet elevation on Arapienn Shale and clays in volcanic rubble.	003
Utah Phacelia (*Phacelia utahensis*)	BLM Sensitive	Salt desert shrub community on the Arapien Shale formation at 5,500 to 5,710 feet elevation.	003
Wards Penstemon (*Penstemon* wardii)	BLM Sensitive	Desert shrub, pinyon-juniper, sagebrush, shadscale, and greasewood communities on the Bald Knoll and Arapien Shale formations between 5,495 to 6,800 feet elevation.	003

Greater Sage-Grouse

Greater sage-grouse (GRSG) was a candidate for listing under provisions of the ESA as determined by the FWS and documented in a March 5, 2010, Federal Register Notice declaring that listing was warranted by precluded by higher priorities. On October 2, 2015, the FWS determined the greater sage-grouse was no longer required protection under the ESA (80 FR 59857) following unprecedented planning efforts completed by the BLM and U.S. Forest Service.

Priority Habitat Management Areas (PHMA) was identified in the 2015 Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region, Including the Greater Sage-grouse Sub-Regions of Idaho and Southwestern Montana, Nevada and

Northeastern California, Oregon and Utah (GRSG ROD) and the Utah Greater Sage-grouse Approved Resource Management Plan Amendment [BLM 2015b].

PHMA was defined as on BLM-administered lands identified as having the highest value to maintain sustainable GRSG populations. These areas include breeding, late brood-rearing, winter concentration areas, and known migration or connectivity corridors.

For the June 2018 lease sale, approximately 646 acres of 1843.36 acres of lease parcel 001 is within PHMA (Appendix B) associated with the Parker Mountain GRSG population. The overall Parker Mountain PA GRSG population is within approximately 1,136,900 acres of PHMA. It includes approximately 60 leks that have had 20 year spring male counts that vary from a low of 312 males in 1997 to a high of 1,313 in 2007, based on annual lek counts by the Utah Division of Wildlife Resources (UDWR). Over the last three years the spring male lek counts have been consistently over 900 (UDWR annual lek counts). The long-term population trend (20-year) is increasing. The PHMA associated with lease parcel 001 is situated on the northeastern edge of the Parker Mountain population. One occupied lek is 3 miles away from the western edge of lease parcel 001. The UDWR has identified the habitat within parcel 001 as winter habitat.

The Parker Mountain area includes diverse habitats ranging from low elevation Wyoming big sagebrush in the valleys up to mountain shrub/aspen at 10,000 feet elevation. However, vegetation within the lease parcels is largely Wyoming big sagebrush in the valleys with some encroaching pinyon pine-juniper on the edges transitioning to a more dominant pinyon pine-juniper woodland site at approximately 7,000 feet elevation.

Mill Meadow Reservoir is located within parcel 001. The water flowing out of the reservoir enters an intact riparian corridor with a cottonwood/willow complex. The riparian corridor contains several dispersed campsites, reflecting its use for recreation.

Numerous roads transect the parcels, including paved, improved gravel and two-track roads. These roads serve as transportation corridors to popular fishing and hunting areas, as well as access to private and agricultural lands. Adjacent to both Parcel 001 & 002 are working agricultural lands. Pivots, grazing cattle, farm equipment and current agricultural practices are apparent. Despite the presence of these developments, disturbance in the overall Parker Mountain area is less than one percent (0.87% - see Appendix L of the GRSG Final EIS – 2015). There are no existing oil and gas leases or existing development near the PHMA parcel, and only one well that is plugged and abandoned

3.3.5 **National Historic Trails**

The BLM along with the National Park Service (NPS) co-administer the Old Spanish National Historic Trail (OSNHT).

Parcel 003 is within the area identified within five miles from the centerline of the designated route. This main route however is along a highway corridor on the other side of the town of

Sigurd, UT. There are no identified high potential sites or segments in this area on either the main route or the segment which travels through Gooseberry Canyon. There are historic routes in the area, but none that have been identified from the period of significance allotted to the OSNHT. The segment that travels through parcel 003 that runs along State Highway 24 through Gooseberry Canyon (Appendix B) has no identified high potential sites or segments. State Highway 24 has multiple oil and gas developments and a gypsum mine located in the surrounding area of parcel 003.

Currently the BLM and NPS are in the process of completing a Comprehensive Administrative Strategy (CAS). That document does not currently identify any high potential sites or segments around parcel 003. The CAS proposes to remove the segment traveling through Gooseberry Canyon from the congressionally designated route, which is in accordance with the absence of evidence from the period of significance established by congress for the OSNHT.

CHAPTER 4 ENVIRONMENTAL IMPACTS

4.1 INTRODUCTION

This chapter discusses the environmental consequences of implementing the alternatives described in Chapter 2. Under NEPA, actions with the potential to affect the quality of the human environment must be disclosed and analyzed in terms of direct and indirect impacts—whether beneficial or adverse and short or long term—as well as cumulative impacts. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by an action but occur later or farther away from the resource. Beneficial effects are those that involve a positive change in the condition or appearance of a resource or a change that moves the resource toward a desired condition. Adverse effects involve a change that moves the resource away from a desired condition or detracts from its appearance or condition. Cumulative impacts are the effects on the environment that result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions.

No Action Alternative

The No Action Alternative is used as the baseline for comparison with the Proposed Action. Under the No Action Alternative, the three parcels totaling 3,707.75 acres would not be leased. There would be no subsequent environmental impacts from oil and/or gas construction, drilling, and production activities. The No Action Alternative would result in the continuation of the current land and resource uses in the proposed lease areas.

The BLM assumes that the No Action Alternative (no lease option) may result in a slight reduction in domestic production of oil and gas. This reduction would diminish federal and state royalty income, and increase the potential for federal lands to be drained by wells on adjacent private or state lands. The public's demand for oil and gas is not expected to change; oil and gas consumption is driven by a variety of complex interacting factors including energy costs, energy efficiency, availability of other energy sources, economics, demographics, and weather or climate. If the parcels are not leased, energy demand would continue to be met by other sources such as imported fuel, alternative energy sources (e.g., wind, solar), and other domestic fuel

production. This displacement of supply could offset any reductions in emissions and disturbance achieved by not leasing the subject tracts in the short term.

The No Action Alternative would not meet the purpose and need for the Proposed Action.

4.2 DIRECT AND INDIRECT IMPACTS

4.2.1 Air Quality

4.2.1.1 Impacts of No Action Alternative

The No Action Alternative would result in no impact to the air quality because the parcels would not be leased or developed.

4.2.1.2 Impacts of Proposed Action Alternative

Existing Sources of Pollution

The Color County District (which includes Sevier and Wayne counties) has existing sources of pollution that vary mainly from regional ozone to particulate matter. Regional ozone is typical in the western states as forest fires, transport from shipping lanes, electric power generation and a conglomerate of other sources combine under certain meteorological conditions. Particulate matter is another issue during dust storms or kicked up from other activities in this dry region.

The act of leasing would not result in direct impacts to air quality. However, should the leases be issued, development of those leases could impact air quality conditions. It is not possible to accurately estimate potential air quality impacts by computer modeling from the project due to the variation in emission control technologies as well as construction, drilling, and production technologies applicable to oil versus gas production and utilized by various operators, so this discussion remains qualitative.

Prior to authorizing specific proposed projects on the subject lease parcels quantitative computer modeling using project specific emission factors and planned development parameters (including specific emission source locations) may be conducted to adequately analyze direct and indirect potential air quality impacts. In conducting subsequent project specific analysis BLM will follow the policy and procedures of the National Interagency MOU Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions through NEPA, and the FLAG 2010 air quality guidance document. Air quality dispersion modeling, if required, includes impact analysis for demonstrating compliance with the NAAQS, plus analysis of impacts to Air Quality Related Values (i.e. deposition, visibility), particularly as they might affect regional Class 1 areas (national parks and wilderness areas).

An oil or gas well, including the act of drilling, is considered to be a minor source under the Clean Air Act. Minor sources are not controlled by regulatory agencies responsible for implementing the Clean Air Act. In addition, control technology is not required by regulatory agencies at this point, all of the parcels occur in NAAQS attainment areas. Different emission sources would result from the two site specific lease development phases: well development and well production. The BLM does look to mitigate pollutants via lease stipulations and further

NEPA actions throughout the lease process. Stipulation UT-S-01: Air Quality has been attached to all parcels.

Well development includes emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. NO_X, SO_2, and CO would be emitted from vehicle tailpipes. Fugitive dust concentrations would increase with additional vehicle traffic on unpaved roads and from wind erosion in areas of soil disturbance. Drill rig and fracturing engine operations would result mainly in NO_X and CO emissions, with lesser amounts of SO_2. These temporary emissions would be short-term during the drilling and completion times.

During well production there are continuous emissions from separators, condensate storage tanks, and daily tailpipe and fugitive dust emissions from operations traffic. During the operational phase of the Proposed Action, NO_X, CO, VOC, and HAP emissions would result from the long-term operation of condensate storage tank vents, and well pad separators. Additionally, road dust (PM_{10} and $PM_{2.5}$) would be produced by vehicles servicing the wells.

Project emissions of ozone precursors, whether generated by construction and drilling operations, or by production operations, would be dispersed and/ or diluted to the extent where any local ozone impacts from the Proposed Action would be indistinguishable from background or cumulative conditions. The primary sources of HAPs are from oil storage tanks and smaller amounts from other production equipment. Small amounts of HAPs are emitted by construction equipment. However, these emissions are estimated to be less than 1 ton per year. Based on the negligible amount of project-specific emissions, the Proposed Action is not likely to violate, or otherwise contribute to any violation of any applicable air quality standard, and may only contribute a small amount to any projected future potential exceedance of any applicable air quality standards.

The construction, drilling, completion, testing, and production of an oil and gas well could result in various emissions that affect air quality. Construction activities result in emissions of particulate matter. Well drilling activities result in engine exhaust emissions of NOx, CO, and VOC. Completion and testing of the well result in emissions of VOC, NO_X, and CO. Ongoing production results in the emission of NOx, CO, VOC, and particulate matter.

Due to the very small level of anticipated development, an emissions inventory (EI) has not been conducted for this lease sale. Table 4-1 presents a typical oil and gas well EI which is estimated for the purpose of this analysis and is based on the following assumptions:

- Each oil and gas well would cause approximately 6 acres of surface disturbance. This acreage includes access.
- Construction activity for each well is assumed to be 10 days. It is further assumed that, based on the acreage disturbed, 4.5 days would be spent in well pad construction and 5.5 days would be spent in road and pipeline construction.
- Control efficiency of 25% for dust suppression would be achieved as a result of compliance with Utah Air Quality regulation R307-205.
- Post construction particulate matter (dust) emissions are likely to occur on a short term basis due to loss of vegetation within the construction and staging areas. Assuming

appropriate interim reclamation, these emissions are likely to be minimal to negligible and will not be considered in this EA.

- Drilling operations would require 20-60 days.
- Completions and testing operations would require 3 days.
- Off road mobile exhaust emissions from heavy equipment during construction activities and on road mobile emissions would not be considered as they are dispersed, sporadic, temporary, and not likely to cause or contribute to exceedence of the NAAQS.

If exploration occurs, short-term impacts would be stabilized or managed rapidly (within two to five years), and long-term impacts are those that would substantially remain for more than five years. An air quality best management practice (BMP) which discusses the amounts of NO_X emission per horse-power hour based on internal combustion engine size, would be attached to all parcels as Stipulation UT-S-01, Air Quality, and would consist of the following provisions:

- All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower must not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower.
- All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gram of NOx per horsepower-hour.

Emission factors for activities of the proposed action were based on information contained in the EPA's Emission Factors & AP 42, Volume I, Fifth Edition (EPA.1995), available at: http://www.epa.gov/ttn/chief/ap42/index.html.

The production emissions from oil storage tanks was estimated based on the emission factor contained in the Colorado Department of Public Health and Environment PS Memo 05-01, Oil & Gas Atmospheric Condensate Storage Tank Batteries Regulatory Definitions and Permitting Guidance (CDPHE 2009), available at: http://www.cdphe.state.co.us/ap/down/ps05-01.pdf.

Table 4-1 Emissions Estimate

	Construction Emissions (Tons)	Drilling Emissions (Tons)			Completions Emissions (Tons)				Ongoing Production Emissions (Tons/year)			
	PM_{10}	NO_X	CO	VOC	VOC	NO_X	CO	PM_{10}	NO_X	CO	VOC	PM_{10}
Typical Well	0.34	13.31	1.83	0.23	0.85	0.07	0.07	0.00	0.01	0.01	6.44	0.00000
					PM_{10}	NO_X	CO	VOC				
Activity Emissions (Tons)					0.34	13.37	1.89	1.08				

(Total emissions for drilling and completion the well)								
Production Emissions (Tons/Year) (Ongoing annual emissions for the well)	0.00000	0.01	0.01	6.44				

Based on the emissions estimates contained in Table 4-1, and considering the location of the proposed leasing relative to population centers and Class 1 areas, substantial air resource impacts are not anticipated as a result of this leasing action, and no further analysis or modeling is warranted. Emissions resulting from the lease sale are not likely to result in major impacts to air quality nor are they likely to cause a violation of the NAAQS.

Additional air quality control measures may be warranted and imposed at the APD stage. These control measures are dependent on future regional modeling studies, other analysis or changes in regulatory standards. As such, a lease notice would be appropriate to inform an operator or the general public that additional air quality control measures would be pursued. Lease notices UT-LN-99 (Regional Ozone Formation Controls) and UT-LN-102 (Air Quality Analysis) would be attached to all lease parcels.

To address impacts that oil and gas development emissions may have on regional ozone formation, the following Best Management Practices (BMPs) would be required through a lease notice UT-LN-99 (Regional Ozone Formation Controls) for any development projects related to this lease sale:

- Tier II or better drilling rig engines
- Stationary internal combustion engine standard of 2g NOx/bhp-hr for engines <300HP and 1g NOx/bhp-hr for engines >300HP
- Low bleed or no bleed pneumatic pump valves
- Dehydrator VOC emission controls to +95% efficiency
- Tank VOC emission controls to +95% efficiency

4.2.2 Greenhouse Gas Emissions/Climate Change

4.2.2.1 Impacts of No Action Alternative

The No Action Alternative would result in no GHG emissions and no impacts to climate change from the proposed lease parcels because they would not be offered at the June 2018 oil and gas lease sale.

4.2.2.2 Impacts of Proposed Action Alternative

Availability of Input Data

On January 2, 2011, the EPA began regulating GHG emissions under the Clean Air Act from mobile and stationary sources of air pollution because of their contribution to global climate change. There would be no GHG emissions as a direct result of the Proposed Action, which is administrative in nature – i.e., issuance of leases for Federal mineral resources. Nevertheless, the BLM recognizes that indirect and downstream GHG emissions are a potential effect of the subsequent fluid mineral exploration and/or development of any leases that are issued, and the

combustion of the oil and gas extracted should recoverable reserves be tapped. Oil and gas activities may lead to the installation and production of new wells, which may consequently produce an increase in GHG emissions. The primary sources of GHG emissions include the following:

- Fossil fuel combustion for construction and operation of oil and gas facilities – vehicles driving to and from production sites, engines that drive drill rigs, etc. These produce CO_2 in quantities that vary depending on the age, types, and conditions of the equipment as well as the targeted formation, locations of wells with respect to processing facilities and pipelines, and other site-specific factors;
- Fugitive CH_4 – CH_4 that escapes from wells (both gas and oil), oil storage, and various types of processing equipment. This is a major source of global CH_4 emissions. These emissions have been estimated for various aspects of the energy sector, and starting in 2011, producers are required under 40 CFR 98, to estimate and report their CH_4 emissions to the EPA; and
- Combustion of produced oil and gas – it is expected that future operations would produce marketable quantities of oil and/or gas. Combustion of the oil and/or gas would release CO_2 into the atmosphere. Fossil fuel combustion is the largest source of global CO_2.

In recent years, many states, tribes, and other organizations have initiated GHG inventories, tallying GHG emissions by economic sector. The U.S. EPA provides links to statewide GHG emissions inventories [EPA 2015]. Guidelines for estimating project-specific GHG emissions are available [URSC 2010], but some additional data, including the projected volume of oil or natural gas produced for an average well, number of wells (as well as other factors described in Section 4.2.1 Air Quality) were used to provide GHG estimates.

At this time, the BLM is disclosing the likelihood and potential magnitude of indirect and downstream GHG emissions but is not able to disclose potential impacts to climate change from the estimated downstream GHG emissions related to the proposed lease sale. The inconsistency in results of scientific models used to predict climate change at the global scale, coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at this level. It is therefore beyond the scope of existing science to relate a specific source of GHG emission or sequestration with the creation or mitigation of any specific climate-related environmental effects. Although the effects of GHG emissions in the global aggregate are well-documented, it is currently impossible to determine what specific effect GHG emissions resulting from a particular activity might have on the environment. Analysis of impacts at this leasing stage would be speculative and would be not be based “reasonable projections and assumptions”.

Indirect Greenhouse Gas Emissions

Total Greenhouse Gas Warming Potential (GWP), which includes direct emissions of carbon dioxide, methane, and nitrous oxide from an oil or gas producing well is estimated based on using a generic emissions calculator resulting in emissions of 1,192 tons per year CO2-e for a

single operational well, and 2,305 tons per year CO2-e for a single drill rig. Since there is no way of predicting what portion of a year it may take to drill a well, or how long wells may operate, as well as the fact that the CO2-e emitted by development activities are a small fraction of the potential downstream emissions, no further calculations are feasible at this stage.

Downstream Greenhouse Gas Emissions

Downstream GHG emissions are estimated based on an average cumulative production rate of 2,142,568 barrels of oil over the life of a well, based on the production history for the oldest producing well in the Covenant field [Utah DOGM, 2017]. Only oil production is estimated, as it is not anticipated any gas production will occur on these parcels. Indirect GHG emissions are also only calculated for carbon dioxide based on combustion of the product.

Using an RFD of three wells for the lease sale and an EPA emissions factor of 0.43 Metric tons of CO2 per Barrel, [EPA, 2016a] indirect GHG emissions can be speculated at 2,763,912.72 metric tons. Actual GHG emissions may range from zero (assuming no lease parcels sold or developed) to an indeterminate upper range based on realized production rates, control technology, and physical characteristics of any oil produced.

As it is not possible to assign a "significance" value or impact to these numbers, the emissions estimates themselves are presented as a proxy for impact.

Uncertainties of GHG Calculations

Although this EA presents a quantified estimate of potential GHG emissions associated with reasonably foreseeable oil and gas development, there is significant uncertainty in GHG emission estimates due to uncertainties with regard to eventual production volumes and variability in flaring, construction, and transportation.

End Uses

The estimates above provide a complete GHG lifecycle of a well from site inspection to possible indirect emissions through combustion. A rough estimate was possible using publicly available information and using estimates from future production for reasonably foreseeable development. With respect to the rough estimates of indirect CO_2 emissions, it should be noted that it is a difficult to discern with certainty what end uses for the fuels extracted from a particular leasehold might be reasonably foreseeable. For instance, some end uses of fossil fuels extracted from Federal leases include: combustion of transportation fuels, fuel oils for heating and electricity generation, as well as production of asphalt and road oil, and the feedstocks used to make chemicals, plastics, and synthetic materials. At this time, there is some uncertainty with regard to the actual development that may occur.

It is important to note that the BLM does not exercise control over the specific end use of the oil and gas produced from any individual federal lease. The BLM has no authority to direct or regulate the end use of the produced oil and/or gas. As a result, the BLM can only provide an estimate of potential GHG emissions using national approximations of where or how the end use may occur because oil, condensate, and natural gas could be used for combustion of

transportation fuels, fuel oils for heating and electricity generation, as well as production of asphalt and road oil, and the feedstocks used to make chemicals, plastics, and synthetic materials.

Monetizing Costs and Benefits: Social Cost of Greenhouse Gases

The BLM finds that including monetary estimates of the social cost of GHGs (SC GHG) in its NEPA analysis for this Proposed Action would not be useful. Because the BLM is not doing a cost-benefit analysis in this NEPA document, we do not believe monetizing only SCC GHG would be instructive.

Possible Future Best Management Practices, Standard Operating Procedures, and/or Mitigation Measures

The BLM holds regulatory jurisdiction over portions of natural gas and petroleum systems, identified in the USEPA *Inventory of U.S. Greenhouse Gas Emissions and Sinks* [EPA 2016a]. Exercise of this regulatory jurisdiction has led to development of Best Management Practices (BMPs), which are state-of-the-art mitigation measures applied to oil and natural gas drilling and production to help ensure that energy development is conducted in an environmentally responsible manner. The BLM encourages industry to incorporate and implement BMPs to reduce impacts to air quality through reduction of emissions, surface disturbances, and dust from field production and operations. Typical measures are mentioned below.

- Open burning of garbage or refuse would not occur at well sites or other facilities;
- Drill rigs would be equipped with Tier II or better diesel engines;
- Vent emissions from stock tanks and natural gas TEG dehydrators would be controlled by routing the emissions to a flare or similar control device which would reduce emissions by 95% or greater;
- All internal combustion equipment would be kept in good working order;
- Flared hydrocarbon gases at high temperatures in order to reduce emissions of incomplete combustion through the use of multi-chamber combustors;
- Watering dirt roads during periods of high use to reduce fugitive dust emissions;
- Co-location wells and production facilities to reduce new surface disturbances;
- Use of natural gas fired or electric drill rig engines;
- The use of selective catalytic reducers and low-sulfur fuel for diesel-fired drill rig engines;
- Adherence to BLM's Notice to Lessees' (NTL) 4a concerning the venting and flaring of gas on Federal leases for natural gas emissions that cannot be economically recovered;
- Protecting frac sand from wind erosion;
- Implementation of directional drilling and horizontal completion technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores;
- Requiring that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; and
- Performing interim reclamation to reclaim areas of the pad not required for production facilities and to reduce the amount of dust from the pads.

Additionally, the BLM encourages oil and natural gas companies to adopt proven, cost-effective technologies and practices that improve operational efficiency and reduce natural gas emissions. In October 2012, USEPA promulgated air quality regulations for completion of hydraulically fractured gas wells [EPA 2015]. These rules required air pollution mitigation measures that reduced the emissions of volatile organic compounds during gas well completions. Mitigation included utilizing a process known as a "green" completion in which natural gas brought up during flowback is captured in tanks rather than in open fluid pits. Among other measures to reduce emissions include the USEPA's Natural Gas STAR program. The USEPA U.S. inventory data shows that industry's implementation of BMPs proposed by the program has reduced emissions from oil and gas exploration and development [EPA 2016].

4.2.3 Migratory Birds including Raptors

4.2.3.1 Impacts of No Action Alternative

The No Action alternative would not result in potential impacts because the parcels would not be leased or developed.

4.2.3.2 Impacts of Proposed Action Alternative

The issuance of leases would not directly impact migratory birds and raptors on the nominated parcels. However, the issuance of leases does convey an expectation that construction and drilling could occur. Chapter 3 identifies that migratory birds and raptors occur on all parcels and could be potentially impacted through future actions on leased parcels. In addition to the direct loss and fragmentation of habitat, noise disturbances from increased traffic levels could displace migratory birds and raptors. However, Lease Notice UT-LN-45 (notice for Migratory bird nesting surveys) would be applied to all parcels to mitigate/minimize these impacts. Modifications to a surface plan of operation would be addressed at the APD stage. Bird and raptor surveys would be conducted and utilized prior to any surface disturbing activity.

Application of the migratory bird and raptor lease notices would be adequate for the leasing stage to disclose potential restrictions to reduce potential impacts. The appropriate notice (LN-UT-45) has been included within the Proposed Action to protect habitat values (see Appendix A). Project-specific impacts relating to future authorizations cannot be analyzed until an exploration or development application is received.

4.2.4 Special Status Plant & Animal Species

4.2.4.1 Impacts of No Action Alternative

The No Action alternative would not result in potential impacts because the parcels would not be leased or developed.

4.2.4.2 Impacts of Proposed Action Alternative

The issuance of leases would not directly impact BLM special status species or habitat on the nominated parcels. However, as the BLM generally cannot deny all surface use of a lease unless the lease is issued as a No Surface Occupancy stipulation, the issuance of leases does convey an expectation that drilling and development would occur. Chapter 3 identifies species and habitat

that could be impacted through future actions on leased parcels. Beyond the potential loss or damage to individuals these impacts include direct dispersed and indirect impacts including: the loss of suitable habitat for the species and its pollinators; increased competition for space, light, and nutrients with invasive and noxious weed species introduced and spread due to the Proposed Action; accidental spray or drift of herbicides used during invasive plant control; altered physiology (*i.e*., photosynthesis, respiration, and transpiration) and reproductive success due to increased fugitive dust resulting from the surface disturbance and project related traffic. Application of the appropriate species-specific lease notices and application of lease notices UT-LN-49 (Utah Sensitive Species) would be adequate for the leasing stage to disclose potential restrictions against future authorizations. See Table 4-3 below. Lease notice UT-LN-49 may require modifications to the Surface Use Plan of Operations when an APD is submitted.

Project-specific impacts relating to future authorizations cannot be analyzed until an application for development is received, however it is assumed to include the direct loss and fragmentation of habitat upon construction of a well pad with its associated road and pipeline. In addition to the direct loss and fragmentation of habitat associated with the Proposed Action, noise disturbances from increased traffic levels could temporarily displace wildlife species. Refer to Table 4-2, "Potential Impacts to Special Status Animal Species" for a brief summary of anticipated impacts should development occur and refer to Table 4-3, "Special Status Species Stipulations/Lease Notices" for a description of the lease stipulations and notices. Additional analysis of impacts from development activities, including Section 7 consultation under ESA, would occur as appropriate at the APD stage.

Table 4-2 Potential Impacts to Special Status Animal Species

Species	Potential Impacts
Golden Eagle Bald Eagle Ferruginous Hawk California Condor	Potential impacts of development of the parcels on raptor species include: 1) increased indirect impacts (including poaching and collisions with vehicles), 2) direct loss or degradation of potential nesting and foraging habitats from construction and drilling, and 3) indirect disturbance from human activity (including harassment, displacement, and noise).
Pygmy Rabbit	Some potential impacts of oil and gas development to pygmy rabbit include: 1) direct loss and fragmentation of habitat from well, road, and pipeline construction, 2) increased human activity causing avoidance and displacement, and 3) increased predation from installation of infrastructure (i.e., storage tanks, power lines, etc.).
Greater Sage-Grouse	The Proposed Action would offer 646 acres of PHMA within the proposed parcel at the June 2018 competitive oil and gas lease sale. The Proposed Action would allow for mineral development while protecting GRSG and their habitat through conservation measures and mitigation. The administrative action of offering the identified parcel for lease presents no direct impacts to GRSG or their habitat. However, the future development of these leases – for example, after an APD is approved – could result in indirect, and possibly direct impacts to GRSG and their habitat. These impacts were taken into account and measures to avoid, minimize, and mitigate impacts to GRSG populations are incorporated into the Utah ARMPA. For the proposed alternative, disturbance from the RFD has been calculated for each parcel based on the disturbance assumptions discussed in Chapter 2. The assumed disturbances create direct and indirect impacts to GRSG habitat and their population. The disturbance

Species	Potential Impacts
	assumptions estimate that six acres will be disturbed within the parcel containing GRSG habitat. Because this parcel is 65% non-habitat and 35% GRSG habitat, it is unlikely that all six acres of assumed disturbance would be situated within GRSG habitat. It is most likely that there would be no direct impacts to GRSG since the parcel containing GRSG habitat would be leased with an NSO stipulation (UT-S-347). If an exception to the NSO is granted, direct impacts from oil and gas developments could include reduction of habitat through the removal of sagebrush. The GRSG habitat in parcel 001 is categorized as winter habitat by the UDWR and is on the edge of ample winter habitat within the Parker Mountain PA. Indirect impacts from oil and gas developments include habitat fragmentation and increased predation, these impacts would only occur if a leasee develops from adjacent lands using directional drilling methods. The likelihood of this occurring in this area is very low. The potential for development in this area is very low, however, and with every APD application, GRSG habitat will be evaluated on a site-specific basis, and conditions of approval to mitigate adverse impacts will be applied for the proposed action. This may include a decision to avoid GRSG habitat, and, when possible, to mitigate direct and indirect impacts. Mitigation and conservation measures for oil and gas development within GRSG habitat are outlined within the Utah ARMPA. These management actions, to help reduce impacts to GRSG and their habitat are discussed in section 1.4. All leasing within GRSG habitat is consistent with the Utah ARMPA, and stipulations developed through land use planning have been applied to the pertinent parcels. For a list of stipulations relating to GRSG and the parcels to which they apply, see (Table 4-3).

The following Endangered Species Act (ESA) related stipulation (in accordance with BLM Handbook 3120–1–competitive Leases (P) (H-3120) p. 35) would be applied to all parcels:

> The lease may now and hereafter contain plants, animals, and their habitats determined to be special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objectives to avoid BLM approved activity that will contribute to a need to list such a species or their habitat. BLM may require modification to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligation under requirements of the Endangered Species Act as amended, 16 U. S. C. § 1531 *et seq*. including completion of any required procedure for conference or consultation.

Table 4-3 Special Status Species Stipulations/Lease Notices

Species	**Lease Notice or Stipulation**	**Parcels**
Golden Eagle	UT-LN-40: Golden Eagle Habitat UT-LN-49: Utah Sensitive Species	All
Bald Eagle	UT-S-276: CSU/Timing Limitations- Bald Eagle UT-LN-107: Bald Eagle	All

Species	Lease Notice or Stipulation	Parcels
Ferruginous Hawk	UT-LN-49: Utah Sensitive Species	All
Sage-Grouse	UT-S-347: NSO - Greater Sage-Grouse Priority Habitat Management Areas UT-S-348: CSU/NSO – Greater Sage-Grouse Disturbance Cap UT-S-349: CSU/NSO – Greater Sage-Grouse Density Limitation UT-S-350: TL/CSU – Greater Sage-Grouse Breeding Season Noise Limitations UT-S-352: CSU – Greater Sage-Grouse Tall Structures UT-S-353: TL – Greater Sage-Grouse Breeding, Nesting and Early Brood Rearing UT-S-354: TL – Greater Sage-Grouse Brood Rearing UT-S-355: TL – Greater Sage-Grouse Winter Habitat UT-LN-49: Utah Sensitive Species UT-LN-129: Greater Sage-Grouse – Disturbance cap UT-LN-130: Greater Sage-Grouse – Density Limitation UT-LN-131: Greater Sage-Grouse – Net Conservation Gain UT-LN-132: Greater Sage-Grouse – Required Design Features UT-LN-133: Greater Sage-Grouse - Buffer	001
Pygmy Rabbit	UT-LN-49: Utah Sensitive Species	001 and 002
California Condor	UT-LN-49: Utah Sensitive Species UT-S-293: CSU/Timing Limitations- California Condor	All
Jones Townsendia (*Townsendia jonesii var.* lutea)	UT-LN-49: Utah Sensitive Species UT-LN-51: Special Status Plants: Not Federally Listed	003
Utah Phacelia (*Phacelia utahensis*)	UT-LN-49: Utah Sensitive Species UT-LN-51: Special Status Plants: Not Federally Listed	003
Wards Penstemon (*Penstemon* wardii)	UT-LN-49: Utah Sensitive Species UT-LN-51: Special Status Plants: Not Federally Listed	003

4.2.5 National Historic Trails

4.2.5.1 Impacts of No Action Alternative

The No Action alternative would not result in potential impacts because the parcels would not be leased or developed.

4.2.5.2 Impacts of Proposed Action Alternative

The issuance of leases would not directly impact the Old Spanish National Historic Trail (OSNHT). However, the issuance of leases does convey an expectation that construction and drilling could occur. Construction and drilling has the potential to alter the historic setting if exploratory wells were found to be productive. However, existing development within five miles of the center line of the OSNHT congressional route, has already impacted the historic setting in this area.

Efforts with stakeholders are currently under way to determine where the best Old Spanish Trail Opportunities exist within the RFO, and these efforts will result in a recreation development strategy that will identify key areas where the ideal Old Spanish Trail recreation experiences are located. Lease Notice UT-LN-65 is applied to parcel 003 in case modifications to the surface use plan of operations are needed to protect the historic integrity of the Old Spanish Trail.

4.3 CUMULATIVE IMPACTS

4.3.1 Introduction

NEPA requires federal agencies to consider the cumulative effects of proposals under their review. Cumulative effects are defined in the Council on Environmental Quality (CEQ) regulations 40 CFR §1508.7 as "the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency . . . or person undertakes such other actions." The CEQ has stated that the "cumulative effects analyses should be conducted on the scale of human communities, landscapes, watersheds, or airsheds" using the concept of "project impact zone" (i.e., the area that might be influenced by the Proposed Action).

Offering and issuing leases for the subject parcels, in itself, would not result in cumulative impacts to any resource. Nevertheless, future development of the leases could be an indirect effect of leasing. The RMP/EIS, provides the BLM's analysis of cumulative effects of oil and gas development based on the reasonably foreseeable oil and gas development scenario. This analysis is hereby incorporated by reference and is available at http://go.usa.gov/xnUHK The cumulative impacts analysis in the RMP/EIS accounted for the potential impacts of development of lease parcels in the planning area as well as past, present and reasonably foreseeable actions known at that time. This analysis expands upon the RMP/EIS analysis by incorporating new information.

4.3.2 Past, Present, and Reasonably Foreseeable Future Actions

Past and Present Actions

There are few actions that have occurred or are currently taking place on lands in and around the proposed lease parcels. Recreation activities including sightseeing, wildlife viewing, nature viewing, photography, hiking, horseback riding, ATV trail riding, and camping have and will continue to take place in the region. Grazing allotments are located within the proposed lease parcels. Covenant Oil and Gas Field is located near parcel 003 and currently actively producing at that well site. There are two permitted mineral material pits, consisting of 9.9 acres located at

NWSESW, and 5 acres located in Lot 3, section 10, T. 27 S., R. 3 E., which is within parcel 001. They are free use permits issued to Wayne County for top soil and fill dirt, respectively. There is one authorized Plan of Operations consisting of 27.9 acres located in NE1/4, section 6, T. 23 S., R. 1 W., which is within parcel 003. The portion of this Plan of Operations on BLM lands has been reclaimed and the case is slated for closure.

Reasonably Foreseeable Future Actions
It is reasonably foreseeable that the recreation and grazing activities that are currently taking place will continue to take place into the future. Additionally, based on trends over the past several years, parcels in this area will continue to be nominated for oil and gas leases and potentially developed accordingly. Any existing leases in this area can be reasonably expected to have exploration and potential development. It is also possible that future rights-of-way may be granted.

4.3.3 Cumulative Impacts

4.3.4 Air Quality

The Cumulative Impact Analysis Area (CIAA) for air quality is the area within and near the RFO. Cumulative impacts are incorporated by reference from the RFO RMP EIS [BLM 2008a] and the BLM's Air Resource Management Strategy Model [AECOM 2014]. Based upon the relatively minor levels of oil and gas development and emissions anticipated for the proposed action, and the application of BMPs, it is unlikely that emissions from any subsequent development of the proposed leases would contribute to regional ozone formation in the project area, nor is it likely to contribute or cause exceedances of any NAAQS. Other emission contributors would continue at present rates such as construction, urban development, and personal vehicle use.

4.3.5 Greenhouse Gas Emissions/Climate Change

There are no boundaries with which to identify a CIAA for climate change. The proposed action could result in a slight incremental increase in GHG emissions, thus contribute to the global impacts. It is now well established that rising global atmospheric GHG emission concentrations are affecting the Earth's climate. These conclusions are built upon a scientific record that has been created with substantial contributions from the United States Global Change Research Program (USGCRP).[1] Studies have projected the effects of increasing GHGs on many resources normally discussed in the NEPA process, including water availability, ocean acidity, sea-level rise, ecosystem functions, energy production, agriculture and food security, air quality and human health.

Based primarily on the scientific assessments of the USGCRP, the National Research Council, and the Intergovernmental Panel on Climate Change, in 2009 the Environmental Protection Agency (EPA) issued a finding that the changes in our climate caused by elevated concentrations

[1] See Global Change Research Act of 1990, Pub. L. 101–606, Sec. 103 (November 16, 1990). For additional information on the United States Global Change Research Program [hereinafter "USGCRP"], visit http://www.globalchange.gov.

of greenhouse gases in the atmosphere are reasonably anticipated to endanger the public health and public welfare of current and future generations. In 2015, EPA acknowledged more recent scientific assessments that "highlight the urgency of addressing the rising concentration of CO2 in the atmosphere," [EPA 2015] finding that certain groups are especially vulnerable to climate-related effects. Broadly stated, the effects of climate change observed to date and projected to occur in the future include more frequent and intense heat waves, longer fire seasons and more severe wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea-level rise, more intense storms, harm to water resources, harm to agriculture, ocean acidification, and harm to wildlife and ecosystems.

It is unknown if the No Action Alternative would result in decreased emissions, thus a reduced global climate change impact. It cannot be predicted if any oil and gas extracted from the proposed action would be combusted as fuel, or used as manufacturing material. In addition, other sources of fossil fuels may be extracted and combusted to meet the energy demands not met by extracting hydrocarbons from the parcels.

4.3.6 **Migratory Birds including Raptors**

The CIAA cumulative impact area for Migratory Birds is the RFO. Cumulative impacts are incorporated by reference to RFO RMP [BLM 2008a]. Current and future uses and impacts of the cumulative impact area may include oil and gas development, urbanization and increased recreational impacts. Future development could result in a loss of habitat and habitat fragmentation. As cumulative activities occur, adjacent habitats may be avoided due to human presence. Habitat alteration occurring throughout the range of these species would potentially reduce the ability of such species to recover. Cumulative impacts include habitat fragmentation, loss of prey species, increased predation, and loss of breeding habitat. The No Action Alternative would not result in an accumulation of impacts.

4.3.7 **Special Status Plant & Animal Species**

The CIAA for BLM Sensitive Species includes the RFO planning area. However, as suitable and occupied habitats have not been completely mapped and population estimates are largely unknown, accurate disturbance estimates for the CIAA cannot be precisely quantified. Cumulative impacts to BLM Special Status Species is directly associated with their ongoing habitat losses, sensitivity to disturbance, and declining population numbers. These species would be more sensitive than other, more common species to impacts related to development within the CIAA. Past, present, and reasonably foreseeable surface-disturbing land uses have reduced, and will likely continue to reduce, the quality and quantity of suitable and occupied habitats in the CIAA for BLM Special Status Species. Based on direct and indirect cumulative impacts, ongoing and future oil and gas development and other land uses such as OHV travel, forage utilization by livestock and wildlife, and noxious weed encroachment and management in the CIAA could cumulatively and incrementally reduce and fragment habitats for BLM Special Status Species.

4.3.8 **National Historic Trails**

Cumulative impacts to the Old Spanish Trail is linked directly to the historic setting of the trail. Depending on the findings of exploratory wells, more analysis could be required to determine the

significance of impacts to the historic trail setting. As further development occurs, similar activities would continue to occur as has happened in this area in the past. This development has the potential to alter the area further and detract from the historic setting. Depending upon the significance of the route, the value of the route from a recreational perspective in comparison to other opportunities in the area, and the desire of the collective stakeholders to utilize the Old Spanish Trail for recreation and tourism efforts in their communities and the greater region.

CHAPTER 5 COORDINATION AND CONSULTATION

Public and agency involvement has occurred as described below.

5.1 LIST OF PERSONS, AGENCIES, AND ORGANIZATIONS CONSULTED

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
U.S. National Park Service	Consult with the NPS as a leasing program partner.	Coordination is ongoing.
U.S. Fish & Wildlife Service	Information on Consultation, under Section 7 of the Endangered Species Act (16 USC 1531)	Coordination is ongoing.
Utah Division of Wildlife Resources	Coordination with UDWR as the agency with expertise on wildlife species.	Coordination is ongoing.
U. S. Forest Service	Consult USFS as a leasing program partner.	Coordination is ongoing.
School and Institutional Trust Lands Administration	Coordinated with as leasing program partner.	Coordination is ongoing.
Public Lands Policy Coordination Office	Coordinated with as leasing program partner.	Coordination is ongoing.
Utah State Historic Preservation Office	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (54 USC 300101 et seq.)	Coordination is ongoing.
Old Spanish Trail Association,	Consultation conducted with consulting parties under the direction of the National Historic Preservation Act (NHPA) (54 USC 300101 et seq.)	Email about undertaking sent November 15, 2017. No response received.
Paiute Indian Tribe of Utah Ute Indian Tribe Hopi Tribe Navajo Nation Utah Navajo Commission Southern Ute Tribe Ute Mountain Ute Kaibab Paiute Tribe Moapa Band of Paiute Indians Zuni Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (54 USC 300101 et seq.)	Coordination is ongoing.

5.2 LIST OF PREPARERS AND PARTICIPANTS

INTERDISCIPLINARY REVIEW

Name	Title	Resource
Sheri Wysong	Fluid Minerals Leasing Coordinator	Air Quality and Greenhouse Gas Emissions
Brant Hallows	Natural Resource Specialist	Invasive/Non-native Species, Soils, Farmlands
Mark Dean	Hydrologist	Floodplains, Water Resources/Quality, Water Rights, Wetlands & Riparian Zones,
Dustin Rooks	Botanist	Hazardous or Solid Wastes
Kelsey Zabrusky	Geologist	Geology/Mineral Resources/Energy Production, Paleontological Resources
Bob Bate	Natural Resource Specialist	Fire/Fuels Management, Woodland/Forestry Management
Larry Greenwood	Wildlife Biologist	Migratory Birds, Special Status Plant and Animal Species, Threatened, Endangered or Candidate Plant and Animal Species, Wildlife (Aquatic & Terrestrial), Vegetation
Cindy Ledbetter	Assistant Field Manager	Team Lead, Socioeconomics
Brandon Jolley	Rangeland Management Specialist	Livestock Operations, Rangeland Health Standards
Jamie Palmer	Archeologist	Cultural Resources, Native American Religious Concerns
Mike Utley	Realty Specialist	Lands/Access
Graydon Bascom	Recreation Planner	Visual Resources, Areas of Critical Environmental Concern, Lands with Wilderness Characteristics, Wilderness Study Areas, Wild and Scenic Rivers, Environmental Justice, National Historic Trails, Recreation
Sue Fivecoat	Assistant Field Manager	Wild Horses and Burros

CHAPTER 6 REFERENCES, ACRONYMS, AND APPENDICES

6.1 REFERENCES CITED

AECOM (2014) *Utah Air Resource Management Strategy Modeling Project Impact Assessment Report* Prepared for the Bureau of Land Management, Department of Interior by AECOM Technical Services, September, 2014 http://go.usa.gov/xRfHb

BLM. (2008a). Richfield Field Office Record of Decision and Approved Resource Management Plan. Bureau of Land Management, Department of Interior. Richfield Field Office, October 2008.

BLM. (2008b). Richfield Field Office Proposed Resource Management Plan and Final Environmental Impact Statement. Bureau of Land Management, Department of Interior. Richfield Field Office, October 2008.

BLM 2013 Oil and Gas Adjudication Handbook Competitive Leases. U. S. Department of Interior, Bureau of Land Management, February 2013 http://go.usa.gov/xRfGK

BLM. (2015a). Utah Greater Sage-Grouse Proposed Resource Management Plan Amendment and Final Environmental Impact Statement. U. S. Department of Interior, Bureau of Land Management, June 2015. http://go.usa.gov/xRffQ

BLM. (2015b). Record of Decision and Approved Resource Management Plan Amendments for Utah. U. S. Department of Interior, Bureau of Land Management, September 2015
BLM. (20015). Resource Management Plan Amendments for the Great Basin Region, including the Greater Sage-Grouse Sub-Region of Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, Utah. 2015

[Boden et. al. 2013] Boden, T. A., Marland, G., & Andres, R. J. *Global, regional, and national fossil-fuel CO2 emissions*. U.S. Department of Energy. Oak Ridge, TN: Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory. doi:10.3334/CDIAC/00001_V2013.
[EIA 2006] Energy Information Agency (EIA) Volume 2, Energy, 2006; *Carbon Dioxide Emissions Coefficients*, http://www.eia.gov/tools/faqs/faq.cfm?id=7&t=7.

Climate Change SIR. 2010. Climate Change Supplementary Information Report for Montana, North Dakota, and South Dakota, Bureau of Land Management. Report on Greenhouse Gas Emissions and Climate Change for Montana, North Dakota, and South Dakota. Technical report prepared for the Montana/Dakotas Bureau of Land Management by URS Corporation. URS Project 22241790.

[EPA 2015] Environmental Protection Agency (EPA). *Prevention of Significant Deterioration (PSD) basic information.* Retrieved from http://www.epa.gov/nsr/prevention-significant-deterioration-basic-information.

[EPA 2016] Environmental Protection Agency (EPA). *U.S. greenhouse gas inventory report, 1990-2014.* Retrieved from https://www.epa.gov/sites/production/files/2016-04/documents/us-ghg-inventory-2016-main-text.pdf.

[EPA 2016a] Environmental Protection Agency (EPA) *Inventory of U.S. Greenhouse Gas Emissions and Sinks* .

[EPA 2017a] Environmental Protection Agency (EPA). Retrieved from https://www.epa.gov/ghgemissions/understanding-global-warming-potentials*Understanding global warming potentials*.

[EPA 2017b] Environmental Protection Agency, February 2, 2016, *Greenhouse Gas Equivalencies Calculator*, https://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-andreferences,

[Hansen et. al. 2006] Hansen J., Sato, M., Ruedy, R., Lo, K., Lea, D.W., & Medina-Elizade, M. (2006). Global temperature change. *Proceedings of the National Academy of Sciences 103*(39), 14288-14293. National Academy of Sciences of the United States. Retrieved from www.pnas.orgcgidoi10.1073pnas.0606291103.

[IPCC 2007] Intergovernmental Panel on Climate Change. (IPCC) *Climate change 2007: Mitigation, contribution of working group III to the fourth assessment report of the Intergovernmental Panel on Climate Change* [B. Metz, O. R. Davidson, P. R. Bosch, R. Dave, L. A. Meyer (eds.)]. Cambridge, UK and New York, NY: Cambridge University Press. Retrieved from http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg3_report_mitigation_of_climate_change.htm.

IPCC, 2013. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.

[IPCC 2016] Intergovernmental Panel on Climate Change (IPCC). (2016). Infographic: The Global Carbon Budget. http://www.wri.org/ipcc-infographics.

[NASA 2007] National Aeronautics and Space Administration Goddard Institute for Space Studies. (2007). *GISS surface temperature analysis*. Retrieved from http://data.giss.nasa.gov/gistemp/2007/.

[URSC 2010] URS Corporation. (2010) *Climate change supplementary information report, Montana, North Dakota and South Dakota Bureau of Land Management.* Denver Co. Retrieved from http://www.blm.gov/mt/st/en/prog/energy/oil_and_gas/leasing/leasingEAs.html

UDEQ 2016 Utah Division of Air Quality 2016 *Utah Division of Air Quality 2016 Annual Report https://documents.deq.utah.gov/air-quality/annual-reports/DAQ-2017-001541.pdf*

[UDOGM 2017] Utah Division of Oil, Gas and Mining, Monthly Production Reports http://go.usa.gov/xnntk April, 2017.

6.2 LIST OF ACRONYMS

ACEC	Areas of Critical Environmental Concern
APD	Application for Permit to Drill
BLM	Bureau of Land Management
BMP	Best Management Practice
CFR	Code of Federal Regulations
CIA	Cumulative Impact Area
CSU	Controlled Surface Use
CWCS	Comprehensive Wildlife Conservation Strategy
DR	Decision Record
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act of 1976
FONSI	Finding of No Significant Impact
GRSG	Greater Sage-Grouse
IM	Instruction Memorandum
LN	Lease Notice
LUP	Land Use Plan
NCLS	Notice of Competitive Lease Sale
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NSO	No Surface Occupancy
OSHA	Occupational Safety and Health Act
RFD	Reasonably Foreseeable Development
RFO	Richfield Field Office
ROD	Record of Decision
ROW	Right-of-Way
SHPO	State Historic Preservation Office
UDWR	Utah Division of Wildlife Resources
USFWS	United States Fish & Wildlife Service
USC	United States Code

WO Washington Office

6.3 LIST OF APPENDICES

Appendix A –Proposed Action with Stipulations for Lease
Appendix B – Maps
Appendix C – Stipulation and Notice Exhibits
Appendix D – Interdisciplinary Team Checklist

APPENDIX A – Proposed Action with Stipulations for Lease

The two standard stipulations from the H-3120, *Endangered Species Act* and *Cultural Resources* as described in Section 2.3 will be applied to all parcels.

UT0618 – 001
T. 27 S., R. 3 E., SLM
Sec. 3: All;
Sec. 10: Lots 1-4, E2NE, E2NW, SW, E2SE;
Sec. 11: All.
1,843.36 Acres
Wayne County, Utah
Richfield Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-102: CSU – Fragile Soils/Slopes 30 Percent or Greater
UT-S-111: NSO- Wetland/Hydric Soils
UT-S-121: NSO- Riparian and Wetland Areas
UT-S-221: CSU/Timing Limitations- Utah Prairie Dog
UT-S-233: Timing Limitation- Crucial Mule Deer and Elk Winter Habitat
UT-S-276: CSU/Timing Limitations- Bald Eagle
UT-S-291: CSU/Timing Limitations- Southwestern Willow Flycatcher
UT-S-293: CSU/Timing Limitations- California Condor
UT-S-347: NSO - Greater Sage-Grouse Priority Habitat Management Areas
UT-S-348: CSU/NSO – Greater Sage-Grouse Disturbance Cap
UT-S-349: CSU/NSO – Greater Sage-Grouse Density Limitation
UT-S-350: TL/CSU – Greater Sage-Grouse Breeding Season Noise Limitations
UT-S-352: CSU – Greater Sage-Grouse Tall Structures
UT-S-353: TL – Greater Sage-Grouse Breeding, Nesting and Early Brood Rearing
UT-S-354: TL – Greater Sage-Grouse Brood Rearing
UT-S-355: TL – Greater Sage-Grouse Winter Habitat

LEASE NOTICES
UT-LN-40: Golden Eagle Habitat
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-68: Notifications and Consultation Regarding Cultural Resources
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-107: Bald Eagle
UT-LN-128: Federal Flood Risk Management Standard
UT-LN-129: Greater Sage-Grouse – Disturbance cap
UT-LN-130: Greater Sage-Grouse – Density Limitation

UT-LN-131: Greater Sage-Grouse – Net Conservation Gain
UT-LN-132: Greater Sage-Grouse – Required Design Features
UT-LN-133: Greater Sage-Grouse - Buffer

UT0618 – 002
T. 27 S., R. 3 E., SLM
Sec. 14: All;
Sec. 15: Lots 1, 2, E2NE, NENW, S2NW, S2.
1,241.39 Acres
Wayne County, Utah
Richfield Field Office

STIPULATIONS
UT-S-01: Air Quality
UT-S-102: CSU – Fragile Soils/Slopes 30 Percent or Greater
UT-S-221: CSU/Timing Limitations- Utah Prairie Dog
UT-S-233: Timing Limitation- Crucial Mule Deer and Elk Winter Habitat
UT-S-276: CSU/Timing Limitations- Bald Eagle
UT-S-293: CSU/Timing Limitations- California Condor

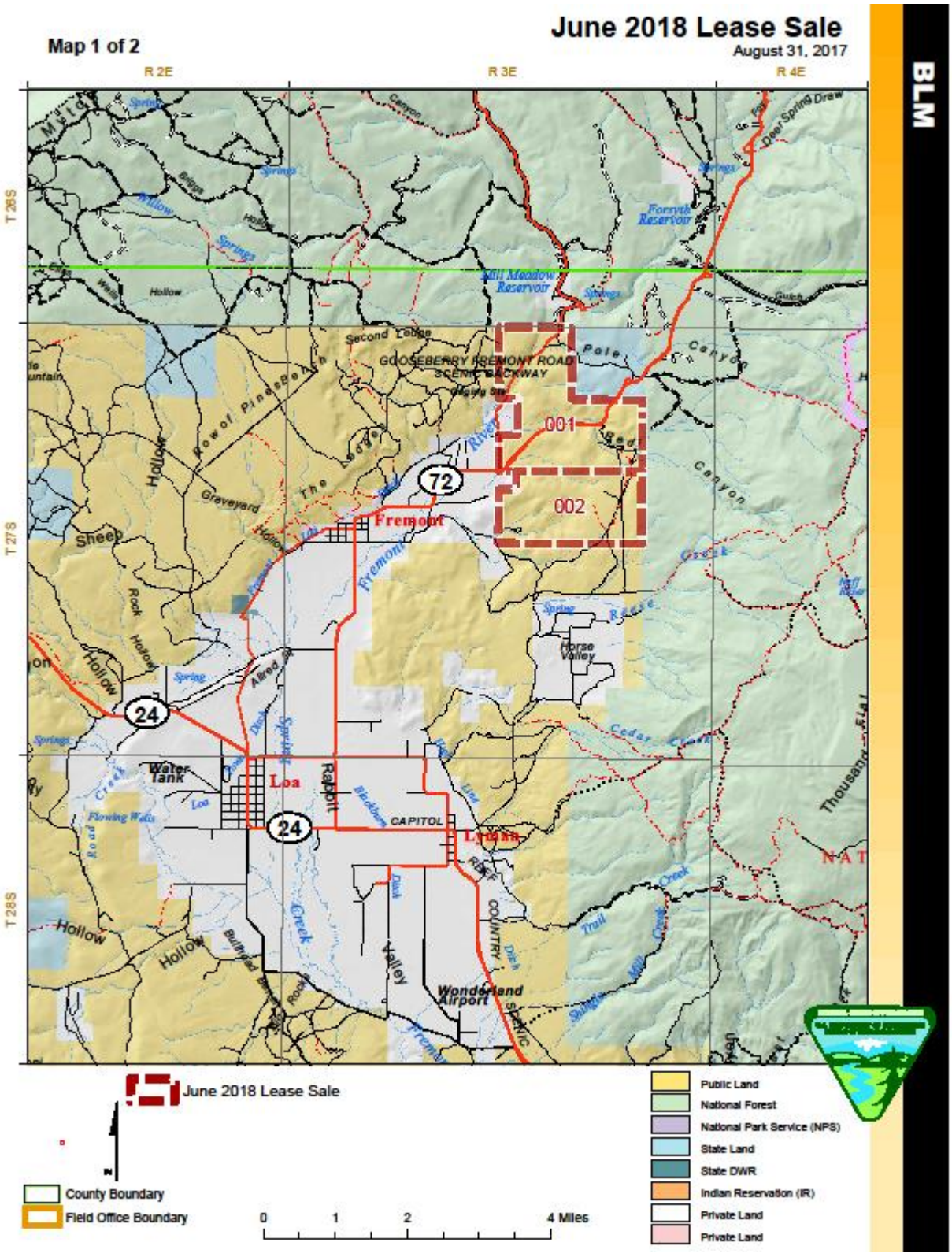
LEASE NOTICES
UT-LN-40: Golden Eagle Habitat
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-68: Notifications and Consultation Regarding Cultural Resources
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-107: Bald Eagle

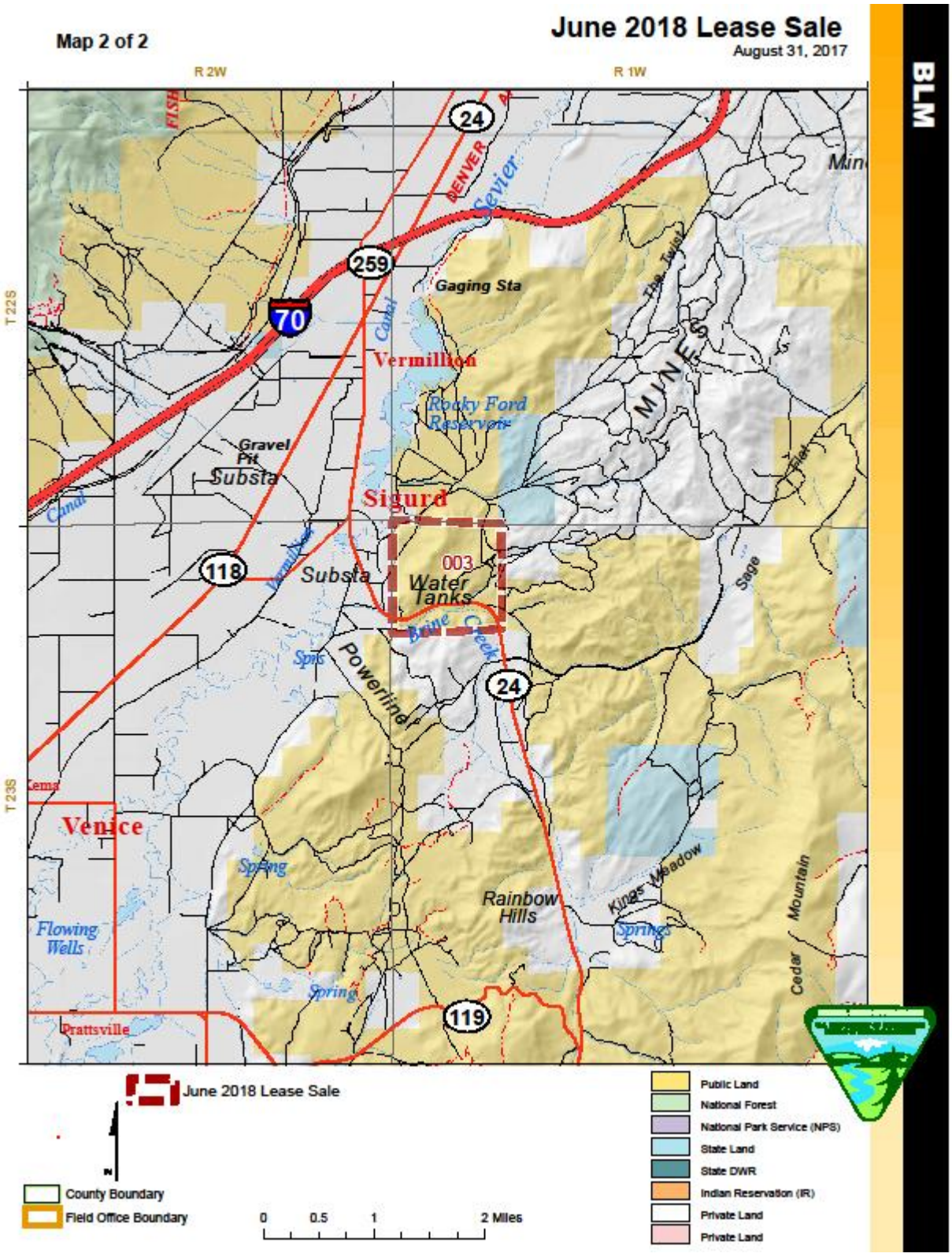
UT0618 – 003
T. 23 S., R. 1 W., SLM
Sec. 6: All.
623.00 Acres
Sevier County, Utah
Richfield Field Office

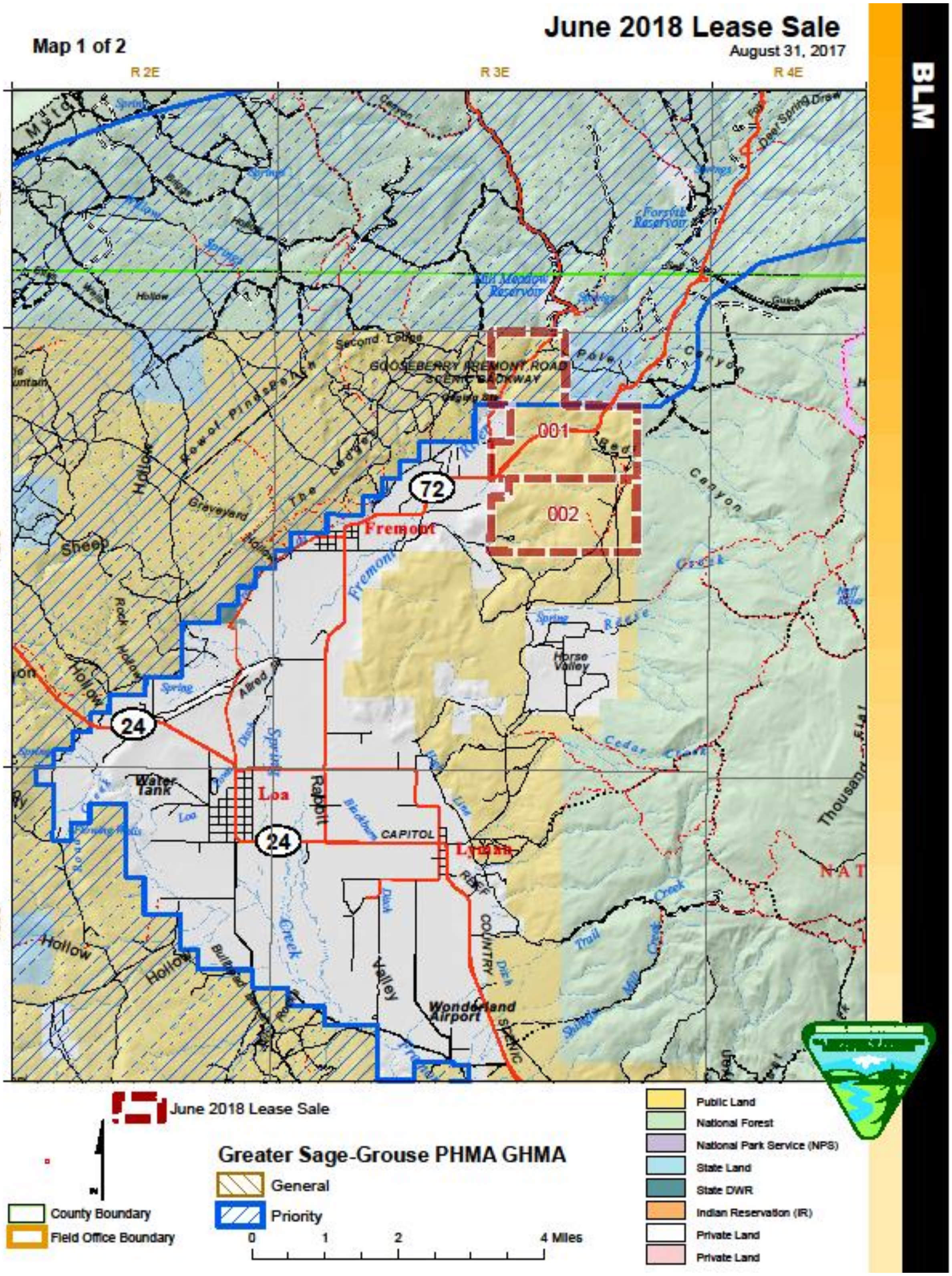
STIPULATIONS
UT-S-01: Air Quality
UT-S-102: CSU – Fragile Soils/Slopes 30 Percent or Greater
UT-S-233: Timing Limitation- Crucial Mule Deer and Elk Winter Habitat
UT-S-276: CSU/Timing Limitations- Bald Eagle
UT-S-293: CSU/Timing Limitations- California Condor

LEASE NOTICES
UT-LN-40: Golden Eagle Habitat
UT-LN-45: Migratory Bird
UT-LN-49: Utah Sensitive Species
UT-LN-51: Special Status Plants: Not Federally Listed
UT-LN-65: Old Spanish Trial
UT-LN-68: Notifications and Consultation Regarding Cultural Resources
UT-LN-99: Regional Ozone Formations Controls
UT-LN-102: Air Quality Analysis
UT-LN-107: Bald Eagle
UT-LN-128: Federal Flood Risk Management Standard

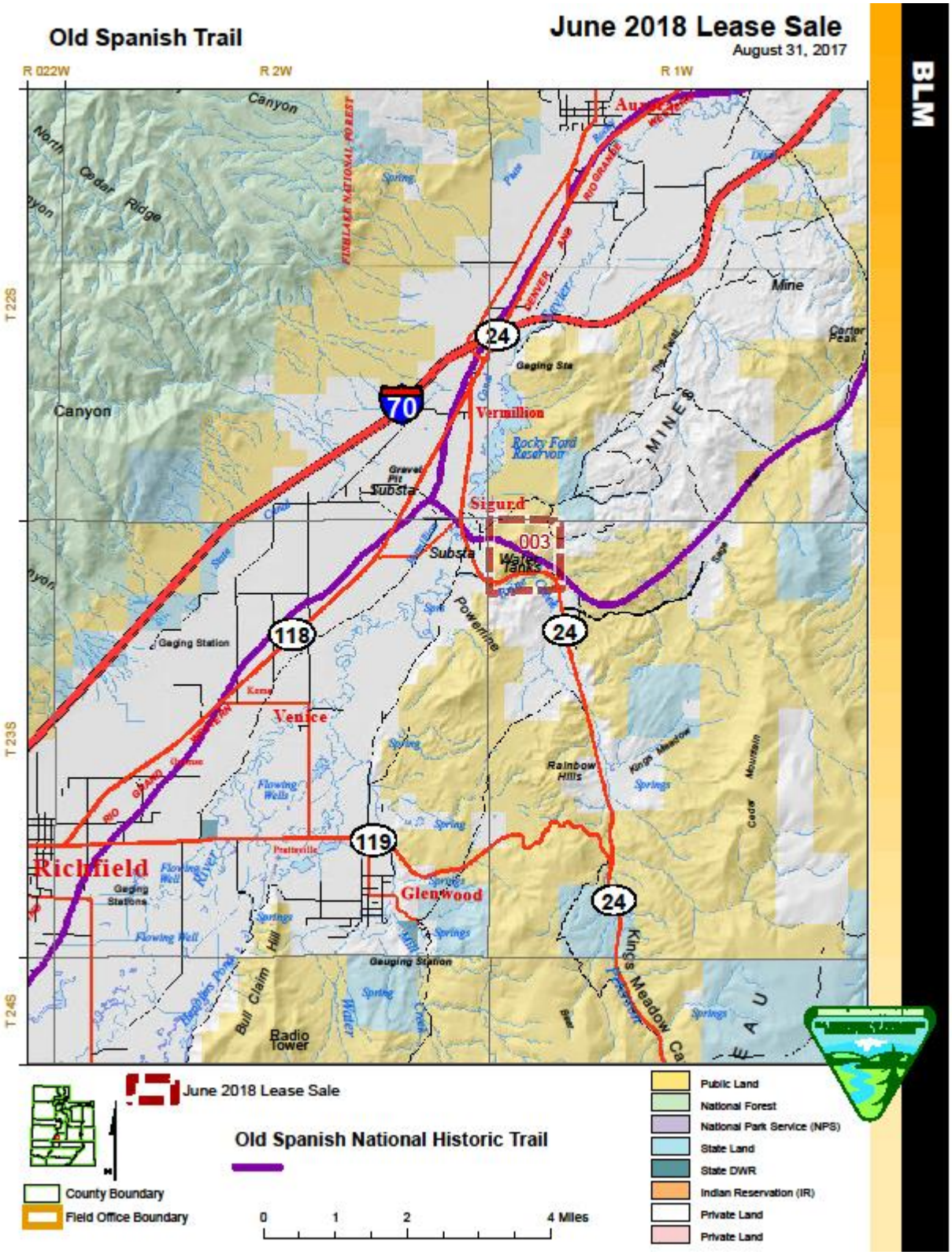
APPENDIX B- Maps


June 2018 Lease Sale
Map 1 of 2
August 31, 2017
R 2E
R 3E
R 4E
T 26S
T 27S
T 28S
BLM
001
002
72
24
24
Fremont
Loa
CAPITOL
Lyman
Wonderland Airport
GOOSEBERRY FREMONT ROAD SCENIC BACKWAY
Mill Meadow Reservoir
Forsyth Reservoir
June 2018 Lease Sale
County Boundary
Field Office Boundary
0
1
2
4 Miles
Public Land
National Forest
National Park Service (NPS)
State Land
State DWR
Indian Reservation (IR)
Private Land
Private Land


Map 2 of 2
June 2018 Lease Sale
August 31, 2017
BLM
R 2W
R 1W
T 22S
T 23S
24
259
70
118
119
Gaging Sta
Vermillion
Rocky Ford Reservoir
Gravel Pit Substa
Sigurd
003
Water Tanks
Substa
Powerline
Brine Creek
Venice
Prattsville
Rainbow Hills
Flowing Wells
Kings Meadow
Spring
Cedar Mountain
Sevier
Canal
June 2018 Lease Sale
County Boundary
Field Office Boundary
0 0.5 1 2 Miles
Public Land
National Forest
National Park Service (NPS)
State Land
State DWR
Indian Reservation (IR)
Private Land
Private Land



June 2018 Lease Sale
August 31, 2017
Map 1 of 2
BLM
R 2E
R 3E
R 4E
T 26S
T 27S
T 28S
001
002
72
24
Fremont
Loa
Lyman
Wonderland Airport
Horse Valley
Water Tank
June 2018 Lease Sale
Greater Sage-Grouse PHMA GHMA
General
Priority
County Boundary
Field Office Boundary
0
1
2
4 Miles
Public Land
National Forest
National Park Service (NPS)
State Land
State DWR
Indian Reservation (IR)
Private Land
Private Land


Old Spanish Trail
June 2018 Lease Sale
August 31, 2017
BLM
R 022W
R 2W
R 1W
T 22S
T 23S
T 24S
Canyon
North Cedar Ridge
Mine
Carter Peak
Vermillion
Rocky Ford Reservoir
Gaging Sta
Gravel Pit Substa
Sigurd
003
Substa
Water Tanks
Powerline
Gaging Station
Venice
Rainbow Hills
Kings Meadow
Cedar Mountain
Richfield
Gaging Stations
Flowing Well
Glenwood
Springs
Gauging Station
Bull Claim
Radio Tower
Kings Meadow Ca
24
70
118
119
June 2018 Lease Sale
Old Spanish National Historic Trail
County Boundary
Field Office Boundary
0 1 2 4 Miles
Public Land
National Forest
National Park Service (NPS)
State Land
State DWR
Indian Reservation (IR)
Private Land
Private Land

APPENDIX C- Stipulation and Notice Exhibits

LEASE STIPULATIONS SUMMARY

H-3120-1 Competitive Leases (P) Illustration 20 (Cultural Resource Protection)	**CULTURAL RESOURCE PROTECTION STIPULATION** This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.
H-3120-1 Competitive Leases (P) Illustration 20 (Threatened and Endangered Species Act)	**THREATENED AND ENDANGERED SPECIES ACT STIPULATION** The lease area may now or hereafter contain plants, animals or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that would contribute to a need to list such species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. 1531 et seq. including completion of any required procedure for conference or consultation.
UT-S-01	**AIR QUALITY** All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower shall not emit more than 2 grams of NO_x per horsepower-hour. **Exception:** This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower. **Modification**: None **Waiver**: None **AND** All new and replacement internal combustion gas field engines of greater than 300 design rated horsepower must not emit more than 1.0 gram of NO_x per horsepower-hour. **Exception**: None **Modification**: None **Waiver**: None

UT-S-102	**CONTROLLED SURFACE USE – FRAGILE SOILS/SLOPES 30 PERCENT OR GREATER** No surface disturbing proposed projects involving construction on slopes greater than 30. If the action cannot be avoided, rerouted, or relocated than a proposed project will include an erosion control strategy, reclamation and a site plan with a detailed survey and design completed by a certified engineer. This proposed project must be approved by the BLM prior to construction and maintenance. **Exception:** None **Modification:** None **Waiver**: None
UT-S-111	**NO SURFACE OCCUPANCY – WETLAND/HYDRIC SOILS** No surface occupancy on wetland soils or soils identified as having hydric soil properties. **Exception:** Consider exceptions to NSO if a site-specific environmental analysis determines that other placement alternatives would cause undue or unnecessary degradation to resources. In addition, require the operator to submit a plan prior to commencing operations that addresses: • Erosion control strategies; • Mitigation to protect surface from rutting, compaction, and displacement, and disruption of surface and subsurface hydrologic function; • Mitigation or restoration measures to restore hydrologic function to site; • Proper survey and design by a certified engineer. **Modification:** None **Waiver:** None
UT-S-121	**NO SURFACE OCCUPANCY – RIPARIAN AND WETLAND AREAS** No surface disturbance and/or occupancy within buffer zones around natural springs. Base the size of the buffer on hydrological, riparian, and other factors necessary to protect the water quality of the springs. If these factors cannot be determined, maintain a 330-foot buffer zone from outer edge. **Exception:** Consider exceptions if it can be shown that (1) there are no practical alternatives to the disturbance, (2) all long-term impacts can be fully mitigated, and (3) the activity will benefit and enhance the riparian area. Consider compensatory mitigation where surface disturbance cannot be avoided within riparian wetland habitats on a site-specific basis. **Modification:** None **Waiver:** None

UT-S-221	**CONTROLLED SURFACE USE/TIMING LIMITATIONS – UTAH PRAIRIE DOG** The Lessee/Operator is given notice that lands in this lease may contain historic and/or occupied Utah prairie dog habitat, a threatened species under the Endangered Species Act (ESA). Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs when prairie dogs are active or hibernating. A temporary action is completed prior to the following active season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one activity/hibernation season and/or causes a loss of Utah prairie dog habitat or displaces prairie dogs through disturbances (e.g., creation of a permanent structure). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the ESA. Integration of, and adherence to, these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of ESA Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following: 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s). 2. Lease activities will required monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. 3. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in prairie dog habitat. 4. Surface occupancy or other surface disturbing activity will be avoided within 0.5 mile of active prairie dog colonies. 5. Permanent surface disturbance or facilities will be avoided within 0.5 mile of potentially suitable, unoccupied prairie dog habitat, identified and mapped by Utah Division of Wildlife Resources since 1976. 6. The lessee/operator should consider if fencing infrastructure on well pad, e.g., drill pads, tank batteries, and compressors, would be needed to protect equipment from burrowing activities. In addition, the operator should consider if future surface disturbing activities would be required at the site. 7. Within occupied habitat, set a 25 mph speed limit on operator-created and maintained roads. 8. Limit disturbances to and within suitable habitat by staying on designated routes. 9. Limit new access routes created by the project. Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with USFWS between the lease sale stage and lease development stage to ensure continued compliance with the ESA. **Exception:** None **Modification:** None **Waiver:** None

UT-S-233	**TIMING LIMITATION - CRUCIAL MULE DEER AND ELK WINTER HABITAT** Restrict surface disturbing activities in crucial mule deer and elk habitats from December 15 through April 15 to protect winter habitats. **Exception:** This stipulation does not apply to the maintenance and operation of existing and ongoing facilities. An exception may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action can be adequately mitigated or it is determined the habitat is not being used during the winter period for any given year. **Modification:** The Field Manager may modify the boundaries of the stipulation area if (1) a portion of the area is not being used as crucial winter range by deer/elk, (2) habitat outside of stipulation boundaries is being used as crucial winter range and needs to be protected, or (3) the migration patterns have changed causing a difference in the season of use. **Waiver:** A waiver may be granted if the winter range habitat is unsuitable or unoccupied during winter months by deer/elk and there is no reasonable likelihood of future winter range use.

UT-S-276	**CONTROLLED SURFACE USE/TIMING LIMITATIONS – BALD EAGLE** The Lessee/Operator is given notice that the lands in this parcel contains nesting/winter roost habitat for the bald eagle, a federally listed species. Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the bald eagle breeding or roosting season. A temporary action is completed prior to the following breeding or roosting season, leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding or roosting season and/or causes a loss of eagle habitat or displaces eagles through disturbances (e.g., creation of a permanent structure). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act (ESA). Integration of, and adherence to, these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of ESA Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following: 1. Surveys will be required prior to operations, unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s), and be conducted according to protocol. 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. 3. Water production will be managed to ensure maintenance or enhancement of riparian habitat. 4. Temporary activities within 1.0 mile of nest sites will not occur during the breeding season of January 1 to August 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 5. Temporary activities within 0.5 miles of winter roost areas, e.g., cottonwood galleries, will not occur during the winter roost season of November 1 to March 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 6. No permanent infrastructure will be placed within 1.0 mile of nest sites. 7. No permanent infrastructure will be placed within 0.5 miles of winter roost areas. 8. Remove big game carrion from within 100 feet from lease roadways occurring within bald eagle foraging range. 9. Avoid loss or disturbance to large cottonwood gallery riparian habitats. 10. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat. Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. 11. All areas of surface disturbance within riparian areas and/or adjacent uplands should be re-vegetated with native species. Additional measures may also be employed to avoid or minimize effects to the species between the lease sale stage and lease development stage. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

	Exception: None **Modification**: None **Waiver**: None
UT-S-291	**CONTROLLED SURFACE USE/TIMING LIMITATIONS – SOUTHWESTERN WILLOW FLYCATCHER** The Lessee/Operator is given notice that the lands in this parcel contain riparian habitat that falls within the range for southwestern willow flycatcher, a federally listed species. Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the nesting season. A temporary action is completed prior to the following breeding season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding season and/or causes a loss of habitat or displaces flycatchers through disturbances (e.g., creation of a permanent structure). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act (ESA). Integration of, and adherence to, these measures, will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of ESA Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following: 1. Surveys will be required prior to operations, unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s), and be conducted according to protocol. 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. 3. Water production will be managed to ensure maintenance or enhancement of riparian habitat. 4. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. 5. Drilling activities will maintain a 300 ft. buffer from suitable riparian habitat year long. 6. Drilling activities within 0.25 mile of occupied breeding habitat will not occur during the breeding season of May 1 to August 15. 7. Ensure that water extraction or disposal practices do not result in change of hydrologic regime that would result in loss or degradation of riparian habitat. 8. Re-vegetate with native species all areas of surface disturbance within riparian areas and/or adjacent uplands. Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA. **Exception**: None **Modification**: None **Waiver**: None

UT-S-293	**CONTROLLED SURFACE USE/TIMING LIMITATIONS – CALIFORNIA CONDOR** The Lessee/Operator is given notice that the lands located in this parcel contain potential habitat for the California Condor, a federally listed species. Avoidance or use restrictions may be placed on portions of the lease if the area is known or suspected to be used by condors. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside potential habitat. A temporary action is completed prior to the following important season of use, leaving no permanent structures and resulting in no permanent habitat loss. This would include consideration for habitat functionality. A permanent action continues for more than one season of habitat use, and/or causes a loss of condor habitat function or displaces condors through continued disturbance (i.e. creation of a permanent structure requiring repetitious maintenance, or emits disruptive levels of noise). The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act (ESA). Integration of, and adherence to these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of ESA, Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following: 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s) approved by the BLM, and must be conducted according to approved protocol. 2. If surveys result in positive identification of condor use, all lease activities will require monitoring throughout the duration of the project to ensure desired results of applied mitigation and protection. Minimization measures will be evaluated during development and, if necessary, Section 7 consultation may be reinitiated. 3. Temporary activities within 1.0 mile of nest sites will not occur during the breeding season. 4. Temporary activities within 0.5 miles of established roosting sites or areas will not occur during the season of use, August 1 to November 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 5. No permanent infrastructure will be placed within 1.0 mile of nest sites. 6. No permanent infrastructure will be placed within 0.5 miles of established roosting sites or areas. 7. Remove big game carrion from within 100 feet from lease roadways occurring within foraging range. 8. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. 9. Re-initiation of section 7 consultation with the Service will be sought immediately if mortality or disturbance to California condors is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.

	Additional measures may also be employed to avoid or minimize effects to the species between the lease sale and lease development stages. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA. **Exception**: None **Modification**: None **Waiver**: None
UT-S-347	**NO SURFACE OCCUPANCY - GREATER SAGE-GROUSE PRIORITY HABITAT MANAGEMENT AREAS** No surface occupancy within Greater Sage-Grouse Priority Habitat Management Areas (PHMA). **Exception:** The Authorized Officer with concurrence with the State Director, may grant an exception only where the proposed action: i. Would not have direct, indirect, or cumulative effects on GRSG or its habitat; OR, ii. Is proposed to be undertaken as an alternative to a similar action occurring on a nearby parcel, and would provide a clear conservation gain to GRSG. The conservation gain must include measures, such as enforceable institutional controls and buffers, sufficient to allow the BLM to conclude that such benefits will endure for the duration of the proposed action's impacts. The Authorized Officer may not grant an exception unless the applicable state wildlife agency, the USFWS, and the BLM unanimously find that the proposed action satisfies (i) or (ii). Such finding shall initially be made by a team of one field biologist or other GRSG expert from each respective agency. In the event the initial finding is not unanimous, the finding may be elevated to the appropriate BLM State Director, USFWS State Ecological Services Director, and state wildlife agency head for final resolution. In the event their finding is not unanimous, the exception will not be granted. Approved exceptions will be made publically available at least quarterly. **Modification:** None **Waiver:** None
UT-S-348	**CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DISTURBANCE CAP** Manage discrete anthropogenic disturbances, whether temporary or permanent, so they cover less than 3 percent on all lands (regardless of land ownership) at each level: 1) PHMA associated with a GRSG population area (referred to as biologically significant units {BSU} when coordinating across state lines) and 2) within the proposed project analysis area to protect PHMA and the life-history needs of GRSG from habitat loss and GRSG populations from disturbance and limit fragmentation in PHMA. This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above (UT-S-347 GRSG) were granted. See Appendix E of the GRSG Approved RMP Amendment for disturbance calculation instructions. Exception: None Modification: None Waiver: None *This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.

UT-S-349	**CONTROLLED SURFACE USE/NO SURFACE OCCUPANCY – DENSITY LIMITATION** Limit the density of energy and mining facilities within Priority Habitat Management Areas (PHMA) during project authorization to an average of one energy/mineral facility per 640 acres on all lands (regardless of land ownership) in PHMA within a proposed project analysis area to protect PHMA and the life-history needs of GRSG from habitat loss and limit fragmentation in PHMA. This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above (UT-S-347 GRSG) were granted. See Appendix E of the GRSG Approved RMP Amendment for calculation details. Exception: None Modification: None Waiver: None *This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.
UT-S-350	**TIMING LIMITATION/CONTROLLED SURFACE USE – BREEDING SEASON NOISE LIMITATIONS** Limit noise from discrete anthropogenic disturbances within Priority Habitat Management Areas (PHMA), including activities from construction, operation and maintenance, to below 10 decibels above ambient sound levels (baseline as available at the signing of the GRSG RMP Amendment ROD or as first measured thereafter) at occupied leks from 2 hours before to 2 hours after official sunrise and sunset during breeding season to protect strutting Greater Sage-Grouse from auditory disturbance associated with development during the breeding season. AND Limit project related noise in other PHMA habitats and seasons where it would be expected to reduce functionality of habitats that support associated GRSG populations in order to protect GRSG from direct disturbance near leks within PHMA. Exception: None Modification: As additional research and information emerges, specific new limitations appropriate to the type of projects being considered would be evaluated and appropriate measures would be implemented where necessary to minimize potential for noise impacts on PHMA GRSG population behavioral cycles. Waiver: None *This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.

UT-S-352	**CONTROLLED SURFACE USE – TALL STRUCTURES*** Limit the placement of permanent tall structures** within Priority Habitat Management Areas (PHMA) breeding and nesting habitats to minimize placement of structures that introduction of e new perching and/or nesting opportunities for avian predators. Exception: None Modification: None Waiver: None *This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted. **For the purposes of this restriction, a tall structure is any man-made structure that provides for perching/nesting opportunities for predators (e.g., raptors and ravens) that are naturally absent, or that decreases the use of an area by GRSG. A determination as to whether something is considered a tall structure will be made based on local conditions such as existing vegetation or topography.
UT-S-353	**TIMING LIMITATION – GREATER SAGE-GROUSE BREEDING, NESTING AND EARLY BROOD REARING*** Manage uses to prevent disturbance to GRSG populations and habitat by applying seasonal restrictions (e.g., no surface disturbance) between Feb 15 – June 15, in Greater Sage-Grouse Priority Habitat Management Areas (PHMA) breeding, nesting, and early brood-rearing habitat to seasonally protect those habitats from disruptive activity. Exception: None Modification: Specific time and distance determinations would be based on site-specific conditions and may be modified due to documented local variations (e.g., higher/lower elevations) or annual climactic fluctuations (e.g., early/late spring, long and/or heavy winter) in order to better protect GRSG, in coordination with the appropriate State of Utah agency. Waiver: None *This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.
UT-S-354	**TIMING LIMITATION – GREATER SAGE-GROUSE BROOD-REARING** Manage uses to prevent disturbance to GRSG populations and habitat by applying seasonal restrictions (e.g., no surface disturbance) between April 15 – August 15 in the Greater Sage-Grouse (GRSG) Priority Habitat Management Areas (PHMA) brood-rearing habitat to seasonally protect that habitat from disruptive activity. Exception: None Modification: Specific time and distance determinations would be based on site-specific conditions and may be modified due to documented local variations (e.g., higher/lower elevations) or annual climactic fluctuations (e.g., early/late spring, long and/or heavy winter) in order to better protect GRSG, in coordination with the appropriate State of Utah agency. Waiver: None *This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.

UT-S-355	**TIMING LIMITATION – GREATER SAGE-GROUSE** **WINTER HABITAT** Manage uses to prevent disturbance to GRSG populations and habitat by applying seasonal restrictions (e.g., no surface disturbance) between Nov 15 – March 15 in Priority Habitat Management Areas (PHMA) for Greater Sage-Grouse (GRSG) winter habitat to protect GRSG within PHMA from disruptive activity during the winter season. Exception: None Modification: Specific time and distance determinations would be based on site-specific conditions and may be modified due to documented local variations (e.g., higher/lower elevations) or annual climactic fluctuations (e.g., early/late spring, long and/or heavy winter) in order to better protect GRSG, in coordination with the appropriate State of Utah agency. Waiver: None *This would only be applicable to new fluid minerals leases if the exception criteria identified for the NSO stipulation above were granted.

LEASE NOTICES SUMMARY

UT-LN-40	**GOLDEN EAGLE HABITAT** The lessee/operator is given notice that lands in this lease have been identified as containing Golden Eagle Habitat. Modifications to the Surface Use Plan of Operations may be required in order to protect the Golden Eagle and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, and 43 CFR 3101.1-2.
UT-LN-45	**MIGRATORY BIRD** The lessee/operator is given notice that surveys for nesting migratory birds may be required during migratory bird breeding season whenever surface disturbances and/or occupancy is proposed in association with fluid mineral exploration and development within priority habitats. Surveys should focus on identified priority bird species in Utah. Field surveys will be conducted as determined by the authorized officer of the Bureau of Land Management. Based on the result of the field survey, the authorized officer will determine appropriate buffers and timing limitations.
UT-LN-49	**UTAH SENSITIVE SPECIES** The lessee/operator is given notice that no surface use or otherwise disruptive activity would be allowed that would result in direct disturbance to populations or individual special status plant and animal species, including those listed on the BLM sensitive species list and the Utah sensitive species list. The lessee/operator is also given notice that lands in this parcel have been identified as containing potential habitat for species on the Utah Sensitive Species List. Modifications to the Surface Use Plan of Operations may be required in order to protect these resources from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, Migratory Bird Treaty Act and 43 CFR 3101.1-2.
UT-LN-51	**SPECIAL STATUS PLANTS: NOT FEDERALLY LISTED** The lessee/operator is given notice that lands in this lease have been identified as containing special status plants, not federally listed, and their habitats. Modifications to the Surface Use Plan of Operations may be required in order to protect the special status plants and/or habitat from surface disturbing activities in accordance with Section 6 of the lease terms, Endangered Species Act, and 43 CFR 3101.1-2.
UT-LN-65	**OLD SPANISH TRAIL** The lessee/operator is given notice that lands in this lease are crossed by the Old Spanish Trail National Historic Trail [Old Spanish Trail Recognition Act of 2002, (Old Spanish Trail PLO 107-325)]. Modifications to the Surface Use Plan of Operations may be required to protect the historic integrity of the Trail, , its resources, its values – such as landscape view sheds, and outdoor recreational opportunities associated with the foregoing.

UT-LN-68	**NOTIFICATION & CONSULTATION REGARDING CULTURAL RESOURCES** The lease area may now or hereafter be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), the Archaeological Resources Protections Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), other statues and Executive Order 13007, and which may be of concern to Native American tribes, interested parties, and the State Historic Preservation Officer (SHPO). BLM will not approve any ground disturbing activities as part of future lease operations until it completes applicable requirements of the National Historic Preservation Act (NHPA), including the completion of any required procedure for notification and consultation with appropriate tribe(s) and/or the SHPO. BLM may require modifications to exploration and development proposals to further its conservation and management objectives on BLM-approved activities that are determine to affect or impact historic or cultural properties and/or resources.
UT-LN-99	**REGIONAL OZONE FORMATION CONTROLS** To mitigate any potential impact oil and gas development emissions may have on regional ozone formation, the following Best Management Practices (BMPs) would be required for any development projects: • Tier II or better drilling rig engines • Stationary internal combustion engine standard of 2g NOx/bhp-hr for engines <300HP and 1g NOx/bhp-hr for engines >300HP • Low bleed or no bleed pneumatic pump valves • Dehydrator VOC emission controls to +95% efficiency • Tank VOC emission controls to +95% efficiency
UT-LN-102	**AIR QUALITY ANALYSIS** The lessee/operator is given notice that prior to project-specific approval, additional air quality analyses may be required to comply with the National Environmental Policy Act, Federal Land Policy Management Act, and/or other applicable laws and regulations. Analyses may include dispersion modeling and/or photochemical modeling for deposition and visibility impacts analysis, control equipment determinations, and/or emission inventory development. These analyses may result in the imposition of additional project-specific air quality control measures.

UT-LN-107	**BALD EAGLE** The Lessee/Operator is given notice that the lands in this parcel contains nesting/winter roost habitat for the bald eagle. The bald eagle was de-listed in 2007; however, it is still afforded protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 1940). Therefore, avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the bald eagle breeding or roosting season. A temporary action is completed prior to the following breeding or roosting season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding or roosting season and/or causes a loss of eagle habitat or displaces eagles through disturbances, i.e. creation of a permanent structure. The following avoidance and minimization measures have been designed to ensure activities carried out on the lease will not lead to the need to consider listing the eagle as threatened or endangered. Integration of, and adherence to the following measures will facilitate review and analysis of any submitted permits under the authority of this lease. Current avoidance and minimization measures include the following: 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s), and be conducted according to protocol. 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated. 3. Water production will be managed to ensure maintenance or enhancement of riparian habitat. 4. Temporary activities within 1.0 mile of nest sites will not occur during the breeding season of January 1 to August 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 5. Temporary activities within 0.5 miles of winter roost areas, e.g., cottonwood galleries, will not occur during the winter roost season of November 1 to March 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 6. No permanent infrastructure will be placed within 1.0 mile of nest sites. 7. No permanent infrastructure will be placed within 0.5 miles of winter roost areas. 8. Remove big game carrion from within 100 feet of lease roadways occurring within bald eagle foraging range. 9. Avoid loss or disturbance to large cottonwood gallery riparian habitats. 10. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. 11. All areas of surface disturbance within riparian areas and/or adjacent uplands should be re-vegetated with native species. Additional measures may also be employed to avoid or minimize effects to the species between the lease sale stage and lease development stage. These additional measures will be developed and implemented in coordination with the U.S. Fish and Wildlife Service.
UT-LN-128	**FEDERAL FLOOD RISK MANAGEMENT STANDARD** To mitigate potential impacts to floodplains, activities would be limited or precluded within the 500 year base flood level (area subject to flooding by the 0.2 percent annual chance flood) or the 100 year base flood elevation plus 3 feet. (Executive Order 13690 amending Executive Order 11988).

UT-LN-129	**GREATER SAGE-GROUSE – DISTURBANCE CAP** Manage discrete anthropogenic disturbances, whether temporary or permanent, so they cover less than 3 percent of 1) PHMA associated with a GRSG population area (referred to as biologically significant units {BSU} when coordinating across state lines) and 2) within the proposed project analysis area, on all lands (regardless of ownership) at each level. (See Appendix E of the GRSG Approved RMP Amendment for disturbance calculation instructions)
UT-LN-130	**GREATER SAGE-GROUSE – DENSITY LIMITATION** Limit the density of energy and mining facilities within Priority Habitat Management Areas (PHMA) during project authorization to an average of one energy/mineral facility per 640 acres on all lands (regardless of land ownership) in PHMA within a proposed project analysis area to protect PHMA and the life-history needs of GRSG from habitat loss and GRSG populations from disturbance and limit fragmentation in PHMA.
UT-LN-131	**GREATER SAGE-GROUSE – NET CONSERVATION GAIN** In Priority and General Habitat Management Areas (PHMA and GHMA) all actions that result in habitat loss and degradation will require mitigation that provides a net conservation gain to the Greater Sage-Grouse (GRSG). Mitigation must account for any uncertainty associated with the effectiveness of the mitigation and will be achieved through avoiding, minimizing and compensating for impacts. Mitigation will be conducted according to the mitigation framework found in Appendix F in the Utah Approved Management Plan Amendment.
UT-LN-132	**GREATER SAGE-GROUSE – REQUIRED DESIGN FEATURES** Apply the Required Design Features (RDF)* in Appendix C of the Utah Approved Management Plan Amendment when leasing within Priority and General Habitat Management Areas (PHMA and GHMA). *RDFs may not be required if it is demonstrated through the NEPA analysis that the RDF associated project/activity is: • Documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable; • An alternative RDF, state-implemented conservation measure, or plan-level protection is determined to provide equal or better protection for GRSG or its habitat; • Provide no additional protection to GRSG or its habitat.
UT-LN-133	**GREATER SAGE-GROUSE - BUFFER** In Priority and General Habitat Management Areas (PHMA and GHMA), the BLM will apply the lek buffer-distances identified in the USGS Report Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review (Open File Report 2014-1239) in accordance with Appendix B, Applying Lek-Buffer Distances, consistent with valid and existing rights and applicable law in authorizing management actions.

APPENDIX D

INTERDISCIPLINARY TEAM CHECKLIST

Project Title: June 2018 Oil and Gas Lease Sale

NEPA Log Number: DOI-BLM-UT-C020-2018-0005-EA

File/Serial Number:

Project Leader: Cindy Ledbetter

DETERMINATION OF STAFF: ***(Choose one of the following abbreviated options for the left column)***

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for relevant impact that need to be analyzed in detail in the EA

Determi-nation	Resource	Rationale for Determination	Signature	Date
RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
PI	Air Quality	The act of leasing does has no direct impact on air resources. If a lease parcel is sold and developed, the construction and operation of oil and gas wells would result in emissions of criteria pollutants which would need to be appropriately analyzed in any subsequent NEPA should development plans be submitted that would warrant rigorous analysis. A representative emissions inventory for a single well should be included in the EA to disclose the types and likely amounts of emissions which could result from development of the parcel. Stipulation UT-S-01 and Lease Notices UT-LN-99 and UT-LN-102 should be attached to all parcels.	Graydon Bascom	9/15/2017
NP	Areas of Critical Environmental Concern	The 2008 Richfield Field Office RMP was reviewed; there are no Areas of Critical Environmental Concern within the proposed action area.	Graydon Bascom	9/15/2017
NI	Cultural Resources	The BLM completed a records review and GIS analysis for the four parcels within the Color Country District administrative area offered for the June 2018 Oil and Gas Lease Sale. The APE is the area bounded by each parcel combined with an additional one half-mile buffer of each parcel. Using extant site data, survey records, geological maps, and GIS, the BLM considered whether reasonably foreseeable development could (12 acres of disturbance per lease parcel) occur within a parcel without adverse effect to historic properties. Historic properties within the APE were analyzed for potential effects caused by an exploratory well pad within parcel boundaries. The parcel-by-parcel analysis of effects took into account parcel size, topography, and location, along with the records-review data and synthesis. Previous survey coverage within the parcels is low and varies from 0% to 30%. Although the survey coverage was low in many areas, reasonable assumptions on site density are made from the existing	/s/ Joelle McCarthy	11-16-17

Determi-nation	Resource	Rationale for Determination	Signature	Date
		survey, professional judgement, expert-informed maps, and ethnographic reports. Also of note, BLM-Utah's Lease Notice 68 – Notifications and Consultation Regarding Cultural Resources (UT-LN-68) will be included with all parcels. The lease notices are informal notices attached to leases that serve as a reminder to lessees that compliance with cultural resource preservation laws is necessary for any future exploration or development activities and that the BLM retains the discretion and authority to require modification of the development proposals, or deny activities all together if cultural resource issues cannot be resolved. Based on the expected site density, topography of the proposed lease parcel, and the literature review and the mitigation of impacts to cultural resources afforded by lease stipulations, Utah Lease Notices, and cultural resources stipulation required by Handbook H-3120, BLM determines that reasonable development (12 acres or less of disturbance associated with a single well pad) could occur within the proposed parcel with a finding of "No Adverse Effect" to historic properties as defined in 36 CFR 800.5(b)for the Color Country June 2018 Oil and Gas Lease Sale.		
PI	Greenhouse Gas Emissions	It is unlikely project-specific impacts would be able to be determined from likely amounts of GHG's from lease development. A qualitative description of climate change impacts should be included in the EA.	Graydon Bascom	9/15/2017
NI	Environmental Justice	As defined in EO 12898, minority, low income populations and disadvantaged groups may be present within the counties involved in this lease sale. The stipulations and notices applied to the subject parcels do not place an undue burden on these groups. Leasing would not adversely or disproportionately affect minority, low income or disadvantaged groups.	Graydon Bascom	9/15/2017
NI	Farmlands (Prime or Unique)	There are approximately 60 acres in the very southwest corner of parcel 001 that are labeled 'prime farmland if irrigated', according to NRCS. However, to be classified as 'prime' it is required to have a dependable moisture supply that comes from either precipitation or irrigation. Because all water is already allocated throughout the water basin, and precipitation does not provide adequate amounts, there is no dependable water source for those lands classified as 'prime if irrigated' and therefore do not warrant special protective measures. There are no other prime or unique farmlands within the lease sale parcels.	Brant Hallows	9/14/17
NI	Floodplains	EO 11988 provides guidance on development in 100 year floodplains. year floodplains are likely to be present within Parcel UT-001 and 003. Application of UT-LN-128 would minimize impact to 100 Year floodplain within Parcels UT-001 and 003. Additionally, if necessary, the Standard stipulation for a 200m offset would be a larger buffer than any floodplains that exist in the area. And therefore no additional analysis is necessary Floodplains are present along Fremont River and Red Canyon Creek in Parcel 001 and along Brine Creek in Parcel 003.	Mark Dean	9/7/2017

Determi-nation	Resource	Rationale for Determination	Signature	Date
NI	Fire/Fuels Management	The proposed action would have no impact to fire/fuels management, the implementation of appropriate reclamation standards at the APD stage would prevent an increase of hazardous fuels. Fuels and fire management would not be impacted by the lease process.	Bob Bate	9/19/17
NI	Geology / Mineral Resources/Energy Production	The 2008 RMP FEIS adequately address the impacts of oil and gas leasing. Oil and gas exploration could lead to an increased understanding of the geologic setting, as subsurface data obtained through lease operations may become public record. This information promotes an understanding of mineral resources as well as geologic interpretation. While conflicts could arise between oil and gas operations and other mineral operations, these could generally be mitigated under the regulations 3101.1-2, where proposed oil and gas operations may be moved up to 200 meters or delayed by 60 days and also under the standard lease terms (Sec. 6) where sitting and design of facilities may be modified to protect other resources. Mining claims were checked on 11/07/2017, and no claims were found to be associated with these lease parcels. Solid minerals, including coal, were also considered. No coal is present in the lease areas. There are two permitted mineral material pits, consisting of 9.9 acres located at NWSESW, and 5 acres located in Lot 3, section 10, T. 27 S., R. 3 E., which is within parcel 0618-001. They are free use permits issued to Wayne County for top soil and fill dirt, respectively. There is one authorized Plan of Operations consisting of 27.9 acres located in NE1/4, section 6, T. 23 S., R. 1 W., which is within parcel 0618-003. The portion of this PoO on BLM lands has been reclaimed and the case is slated for closure. Any oil and gas development can be managed so as to either avoid, or if necessary, work within the 42.8 acres. In conclusion, there will be no negative affects to mineral resources.	Kelsey Zabrusky	11/14/17
NI	Invasive Species/Noxious Weeds (EO 13112)	Noxious/invasive weed species are present on Parcel 3 and may be present on parcels 1 and 2. The BLM coordinates with County and local governments to conduct an active program for control of invasive species. Standard operating procedures such as washing of vehicles and annual monitoring and spraying along with site specific mitigation applied as conditions of approval (COA) at the APD stage should be sufficient to prevent the spread or introduction of Invasive, Non-native species. All disturbed areas and piles of top soil should be reseeded with weed free seed the first fall after the disturbance is made to provide competition against weeds. Other constraints, including the use of certified weed free seed and vehicle/equipment wash stations, would be applied as necessary at the APD stage as documented in filing plans and conditions of approval. Control measures would be implemented during any ground disturbing activity. Treatment will occur as part of regular operations, BMPs, SOPs and site specific mitigation applied at the APD stage as COAs. Negligible impacts would be expected as a result of leasing and exploration. All disturbed areas and piles of top	Brant Hallows	9/5/17

Determi-nation	Resource	Rationale for Determination	Signature	Date
		soil should be reseeded with weed free seed the first fall after the disturbance is made to provide competition against weeds. These expectations are required for all parcels in the lease.		
NI	Lands/Access	As described, the proposed action would not substantially affect access to public land on a permanent basis. No roads providing access to public land would be closed for any extended period of time. The proposal would be subject to valid prior existing rights including county-maintained roads (See BLM internal/public Master Title Plat web site as there are various rights-of-way in the proposed areas). Any operations would need to be coordinated with rights-of-way (ROW) holders and adjacent non-federal landowners. Off-lease ancillary facilities that cross public land, if any, may require a separate authorization (Generally Access Roads and utility ROW). It is anticipated that existing ROW in proposed operation areas would not be negatively affected because site-specific mitigation applied at the APD stage, including the ability to move operations up to 200 meters in any direction required. These measures would ensure that existing ROW would be avoided, restored, or replaced if damaged. Seasonal route restrictions should also be dealt with through site-specific mitigation on an as-needed basis. Surface disturbance within and outside described project areas would need to be rehabilitated and reseeded on a site-specific basis as directed by authorizing BLM officials. Plans should be made for removal of any generated trash/debris from public land and discarded at an authorized facility.	Michael B. Utley	10/1/2017
NI	Livestock Grazing	The two parcels that fall in Wayne County fall within the Hector Hollow and North Fremont allotments. Hector Hollow is permitted for cattle grazing in the spring for 80 AUMs. It is also permitted for 58 sheep AUMS in the winter. The North Fremont allotments is permitted for 230 sheep AUMs in the Winter. The parcel that falls within Sevier County is in the Gypsum Allotment. The allotment is permitted for both sheep and cattle throughout the fall, winter, and spring. The total AUMs on the allotment are approximately 1030. While livestock use is permitted in these areas, the potential for impacts due to leasing is expected to be negligible because interaction with livestock would be minimal.	Brandon Jolley	9/12/2017
PI	Migratory Birds	Habitat for priority migratory birds occurs on all 3 parcels. The application of lease notice UT-LN-45 is warranted on parcels 001, 002, and 003. The following documents are incorporated: Utah Comprehensive Wildlife Conservation Strategy (CWCS), Utah Partners in Flight Avian Conservation Strategy Version 2.0. (Parrish, et.al. 2002), Birds of Conservation Concern (2002), Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, MOU between the USDI BLM and USFWS to Promote the Conservation and Management of Migratory Birds (4/2010), and Utah Supplemental Planning Guidance: Raptor Best Management Practices (BLM UTSO IM 2006-096)	Larry Greenwood	9-11-17

Determi-nation	Resource	Rationale for Determination	Signature	Date
PI	National Historic Trails	The Congressionally designated location of the Old Spanish Trail (OST) lies within five miles of parcel 003. Given topographic complexity and extant impacts to the area's setting, including the State Highways 24 & 118 corridors and the town of Sigurd, a single exploratory well would not further impact the trail. The other parcels in this sale do not create negating impacts to the trial. Lease Notice #UT-LN-65 applies to parcel 003. Prior to any exploration or development, the Affected area would be surveyed for cultural resources, and the project would be designed to avoid impacts to any resources identified. Leasing these three parcels will not result in impacts beyond those identified in the RMP/EIS.	Graydon Bascom	11/16/17
NI	Native American Religious Concerns	Letters were sent via certified mail on December 1, 2017. The following tribes were notified: Paiute Indian Tribe of Utah, Ute Indian Tribe, Hopi Tribe, Navajo Nation, Utah Navajo Commission, Southern Ute Tribe, Ute Mountain Ute, Kaibab Paiute Tribe, Moapa Band of Paiute Indians, Zuni Tribe. No concerns have been identified with the proposed project; however, consultation is ongoing.	Joelle McCarthy	12-8-17
NI	Paleontology	The Arapien Shale Formation has surface exposure on lease parcel 0618-003 and the Salt Lake Formation has surface exposure on parcels 0618-001 & -002. Both units are Potential Fossil Yield Classification System - Class 3 formations. Class 3 formations are defined as geologic units where fossil content varies in significance, abundance, and predictable occurrence. The RFO RMP ROD Management Decision PAL-6 for paleontological resources requires a paleontological assessment prior to permitting surface disturbing activities in areas where there is a moderate potential to affect scientifically significant paleontological resources. This includes roads, pads, pump stations, pipelines, etc. Site specific analysis will be applied at the APD level by performing a pre-work paleontological inventory/survey to determine if mitigation is potentially necessary. Mitigation can be avoidance or excavation by BLM-permitted paleontologists.	Kelsey Zabrusky	11/14/17
NI	Rangeland Health Standards	While some ground disturbance is expected from any potential exploration, it is not expected to produce a level of disturbance that will negatively affect the standards for rangeland health. Care should still be taken to minimize any spread of weedy species and to properly rehabilitate the sites (Refer to Invasive Species/Noxious Weeds section).	Brandon Jolley	9/12/2017
NI	Recreation	The proposed locations are in highway corridors and would not directly impact recreational visitors, however one site is in the area of the Mill Meadow Reservoir. Because of other resource concerns an NSO stipulation is already placed on this proposed parcel. Development of these parcels may be noticeable to recreational visitors, but not at a level requiring further analysis.	Graydon Bascom	9/15/17
NI	Socio-Economics	No quantifiable additional or decreased economic impact to the local area (Wayne and Sevier counties) would be caused by the proposed action.	Cindy Ledbetter	
NI	Soils	Leasing would not have a direct impact on these resources; however, there is a possibility that exploration/development	Brant Hallows	9/5/17

Determi-nation	Resource	Rationale for Determination	Signature	Date
		could occur in the future. SOPs, BMPs and site specific design features including reclamation would be applied at the APD stage as COAs to mitigate soil disturbing actions on soils and watersheds. The application of stipulation UT-S-102 is warranted on all parcels. UT-S-102: "No surface disturbing proposed projects involving construction on slopes greater than 30 percent. If the action cannot be avoided, rerouted, or relocated then a proposed project will include an erosion control strategy, reclamation and a site plan with a detailed survey and design completed by a certified engineer. This proposed project must be approved by the BLM prior to construction and maintenance." In light of existing knowledge and data regarding soils/watersheds for the subject parcels and the protective measure that would be applied to development on the parcels, significant impacts are not anticipated to occur as a result of leasing the proposed parcels.		
PI	Special Status Plant & Animal Species other than FWS candidate or listed species	There are three sensitive plant species that occur on parcel 003. They are Jones Townsendia (*Townsendia jonesii var.* lutea), Utah Phacelia (*Phacelia utahensis*), and Wards Penstemon (*Penstemon* wardii). Lease Notice LN-UT-49 is warranted on this parcel. A portion of parcel 001 contains priority sage grouse habitat. Due to the NSO stipulation, disturbance is not anticipated on this parcel. If the NSO exception were granted, surface disturbance could occur. It would be warranted to apply the following Lease Notices on parcel 001: UT-LN-129, UT-LN-130, UT-LN-131 and UT-LN-132. Also, Lease Stipulation UT-S-2347 is warranted on parcel 001. The Pygmy Rabbit and its habitat are found within parcels 001 and 002. Lease Notice LN-UT-46 and LN-UT-49 are warranted on these parcels. Habitat for the sensitive Ferruginous Hawk is found within all three parcels. Application of lease notice UT-LN-49 is warranted on these parcels. The Bald Eagle and its habitat occurs on all three parcels. Lease stipulation UT-S-276 is warranted on these parcels. Golden Eagle habitat occurs on all three parcels and lease notice UT-LN-40 is warranted on all three parcels. Washington Office BLM lease stipulation as directed by WO IM No. 2002-174 would apply to all parcels.	Larry Greenwood	9-11-17
NP	Threatened, Endangered or Candidate Plant Species	The standard ESA lease stipulation quoted in the proposed action will be added to all parcels. However, no Threatened,	Larry Greenwood	9-11-17

Determi-nation	Resource	Rationale for Determination	Signature	Date
		Endangered or Candidate Plant Species are known to occur on the proposed parcels.		
NI	Threatened, Endangered, or Candidate Animal Species	Habitat for the Threatened Utah Prairie Dog occurs in Parcels 001 and 002. Lease stipulation UT-S-221 is warranted on these parcels. Southwest Willow Flycatcher habitat occurs in Parcel 001 and therefore lease stipulation UT-S-291 is warranted. California Condor habitat occurs on all parcels. Lease Notice LN-UT-49 is warranted on these parcels. In addition, CSU California Condor UT-S-293 applies to these parcels. Section 7 consultation with the U.S. Fish and Wildlife Service (FWS) has been completed for all lease sales as follows: In October, 2008, a Biological opinion from the FWS was a portion of the approved RMP. BLM and FWS personnel completed work on set of lease notices for listed species that are to be attached to oil and gas leases offered in the State. The notices contain current avoidance and minimization measures that if followed could reduce the scope of Section 7 consultation at the permit stage.	Larry Greenwood	9-11-17
NI	Wastes (hazardous or solid)	There are currently no known waste issues associated with the proposed lease areas. If development of roads or well pads occur, potential release from equipment could be possible. State and Federal regulations would govern the use, storage and disposal of any products that could potentially impact persons or environment. Reporting and mitigation efforts would be required should such an event occur.	Dustin Rooks	9/22/2017
NI	Water Resources/Quality (drinking/surface/ground)	Oil and gas development that may occur as a result of this lease sale may affect water resources. The decision to lease is connected to these impacts; however it does not affect water resources to a degree that detailed analysis is required. There are numerous best management practices listed in the BLM Gold Book to address site selection, design, and erosion control. Specific considerations identified to mitigate potential impacts to water quality and water resources include Lease Notice #128 and Stipulation #'s UT-S-102, UT-S-111, and UT-S-121. In addition to these measures, Federal Oil & Gas Onshore Order #2 details specific provisions for performance, well bore/completion design & construction, operations, and surface use to protect/isolate useable ground water zones. Internal scoping has determined that it is generally accepted that these measures would minimize the potential for impacts to water resources and therefore detailed analysis is not required for a lease level EA. It may be necessary to undertake detailed analysis of impacts to water resources when specific plans for development are proposed, but the decision whether to complete NEPA analysis will be made at that time based on scoping, issue sensitivity, and other considerations. Lease stipulations UT-S-111 and UT-S-121 would apply to Parcel 001 due to its proximity to surface water resources. There are no drinking water protection zones within the lease parcels and therefore none of the related lease notices would apply.	Mark Dean	9/7/2017

Determi-nation	Resource	Rationale for Determination	Signature	Date
NI	Water Rights	There are numerous water rights within proposed parcels. None of these water rights are public water reserves. The action of leasing these parcels is not expected to have any impacts to water rights and therefore additional analysis is not necessary.	Mark Dean	9/7/2017
NI	Wetlands/Riparian Zones	Riparian areas and potential wetland areas are present in parcel 001 along the Fremont River and the shoreline of Mill Meadow Reservoir. Lease Stipulations UT-S-111 and UT-S-121 would apply. These stipulations restrict development within and near wetlands and riparian zones. No impacts would be expected and no additional analysis is necessary.	Mark Dean	9/7/2017
NP	Wilderness/WSA	There are no Wilderness/WSA designations near the proposed parcels.	Graydon Bascom	9/15/2017
NI	Wildlife and Fish Excluding Designated/Special Status Species	A particular species habitat and corresponding criteria were identified from GIS data layers developed by the BLM, Utah Division of Wildlife Resources/Utah Natural Heritage Program data and field office records. These habitats are addressed in the LUP and provided needed protections through stipulations or notices. Crucial deer and elk winter/spring range occurs on all 3 parcels as follows: 001, 002, and 003. The application of stipulation UT-S-233 is warranted on these parcels.	Larry Greenwood	9-11-17
NI	Woodland / Forestry	The proposed action of leasing fluid minerals would have no impact to woodland/forestry management because forestry products within the proposed area are minimal.	Bob Bate	9/19/17
NI	Vegetation Excluding Designated/Special Status Species	SOPs, BMPs and site specific design features applied at the APD stage including reclamation, as COA would address soil resource issues not already analyzed in the FEIS/PRMP. Leasing fluid minerals would have little or no impact on the vegetative resource of these parcels. The impact would happen if and when actual drilling etc. occurs on the parcel. If an Application to Drill Permit (APD) is received, then Best Management Practices (BMPs) and site specific design features to minimize disturbance to vegetation, would be applied as Conditions of Approval.	Larry Greenwood	9-11-17
NI	Visual Resources	The proposed locations are VRM class III and IV. Which are managed to allow for moderate changes to the landscape.	Graydon Bascom	9/15/17
NP	Wild Horses and Burros	The RFO RMP was reviewed and there are no wild horse and burro, or Herd Management Areas located in or near the project area.	Sue Fivecoat	9.12.17
NP	Lands with Wilderness Characteristics	The Richfield RMP identified no Lands with Wilderness Characteristics that were near the proposed locations.	Graydon Bascom	9/15/17

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments

Determi-nation	Resource	Rationale for Determination		Signature	Date
Environmental Coordinator					
Authorized Officer					